The

Textile Mercury:

A Representative Weekly Journal for

Spinners, Manufacturers, Machinists, Bleachers, Colourists, and Merchants,

In all Branches of the Textile Industries.

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Current Topics.

"LUMPS," AS THEY AFFECT CALICO PRINTERS AND MANUFACTURERS.

There is quite a considerable interest in the investigation of changes wrought by the developments of trade. A minor one, as we have already pointed out, recently turned up in connection with calico printing. Once upon a time, as is said in nursery stories, the piece of printing cloth was 24 yards in length, and generally came out from the process of printing two yards longer, this arising from the stretching and calendering undergone. The printer charged by the piece. The gain was not of much importance, because when the increased length was torn off it was only "a fent." To improve the value of this by getting a greater length, the piece of 24 yards was doubled and made 48 yards, the printer, of course, getting his charge doubled likewise. Merchants, upon further gain intent, added two yards to the double piece, making what had been 48 yards into 50, so that when the piece came to be printed it finished out usually in an extra dress length. This was quite proper and very economical so far as all we have stated went. But one little point was overlooked, and that was paying the printer for the added lengths. The strong competition in the printing trade of course prevented individual printers doing more than grumble. The movement, however, continued, 50 yard pieces becoming 58 yards, and these in turn were doubled and called 'lumps.' 'Lumps' have been made any length from 116 to 124 yards, and as we have even seen a proposal to double these, it is quite possible that the statute mile may some day be reached. There is no objection to this being done in the interests of economy, so long as no one is injured. But there are two parties likely to protest: the printer and the manufacturer. The objections of the former we have already commented upon; all that is needed to obviate his trouble is to pay him for his work by yardage. But the objection of the manufacturer is a double one. Excessively long pieces are very inconvenient to weave, owing to the rollers of the loom not being adapted for the purpose, and, in addition, the alleys between the looms are too narrow to permit of such lengths being woven with any degree of comfort, as a weaver cannot turn round between her looms with two such rollers full. There are many other objectionable points, but upon these it is not necessary to dilate. Another important objection, however, on the part of the manufacturer, is that the weaving of long pieces seriously diminishes the production from the looms. A weaver who has failed to finish a piece at the making-up day, and starts another week with a good balance of cloth in hand, grows careless and indifferent, and very soon this balance is frittered away and lost. Presently a second failure to complete the piece takes place, and the process begins anew. The conditions most favourable for drawing out the energy, care, and skill of the worker are those in which the week's work can be cleanly finished at "making-up time." Then the weaver knows that attention must be unremitting from the beginning to the end of the week, or the week's earnings will suffer. This question of long lengths is therefore one that deserves the attention of manufacturers as well as calico printers, and we trust will receive it.

ABATEMENTS FOR BAD WORK.

Weavers don't like being "baited," as a local contemporary spells this word. Neither do bulls like it, nor would other humans than weavers, were the process such as is indicated by the above spelling of the word. But the above is wrong, and does not convey a correct impression. The word is "bated," a contraction of the verb to abate. Hence when weavers say they have been "bated" they mean to say that an abatement has been made from the contract price for weaving a piece of cloth. This is only done when the weaver has made faults in the web that could have been avoided with attention and care. As the master stipulates for and the weaver contracts to give good work, when he or she fails to do so they break the contract. It is a maxim of law that a contract broken on one side is not binding upon the other; hence the employer is quite justified in refusing to pay the contract price for inferior work. The readiest, and indeed the only practical way of dealing with the matter, is to assess the amount of damage and deduct it from the weaver's wage for weaving the piece. "Ah, but," objects the stickler for the weaver's strict rights, and who seems entirely blind to the wrongs inflicted upon the employer, "the master constitutes himself judge, jury, and executioner." He does no such thing. He puts a working man in that position, who, if anything, has a sympathy for and a bias towards his class. This is the cloth-looker, and he assesses the damage and makes the abatement, which is not a fine in any sense. Those who affirm it is, and object to it on that score only, shew their want of knowledge, and their incapacity to discriminate between two things radically different in their essence. A strike has just taken place at the mill of Mr. G.W. Nichols, Canterbury-street, Blackburn, through "bating" for bad work. Strikes on this ground are rarely just, and ought never to occur. In the first place it is very seldom, indeed, that the abatement made amounts to the loss incurred, owing to the depreciation of the work. Of course weavers always think it does; but had they the wider knowledge of their employers, or even of the 'cut-looker,' they would come to a different conclusion. The best thing in the interests of

employer and the weavers is for the cut-looker to be uniformly strict, the result being that he soon induces such attention and care on the part of the weavers that there is rarely any occasion to make an abatement at all. He thus has pleasure in his own work, because it is so rarely necessary to exercise the power confided to him. The cloth is duly despatched to Manchester: there are few or no complaints, nor rejected pieces; and there are no cancelled orders for bad work, on which the employer's losses are often heavier than the abatements of a couple of years would compensate him for. When heavy "bating" is resorted to it indicates one of two things: Firstly, either that the cut-looker has been lax and has allowed the discipline of his weavers to run down; or, secondly, that the employer is introducing a considerably higher quality of work, up to which the weavers require to be brought. We do not know which of these may be at the basis of the dispute in Blackburn. But in any event a strike is unjustifiable, as it means that the best weavers have to sacrifice their interests to the sentiments of the indifferent ones. Weavers may always be assured that abatements are never profitable to manufacturers, notwithstanding all that may be said to the contrary, and we do not believe that instructions are ever given to cloth-lookers that they have to make their wages out of the abatements of the week. Indeed we should look with very great suspicion upon a cloth-looker who succeeded in doing it, and should conclude that his employer would do much better for his own interests by dispensing with his services.

WEAVERS AND "TALLY BOARDS."

We are rather surprised to find from an incident which has just occurred in Burnley, that the "tally" system is not in vogue in the weaving sheds in that town. How either employers or employed have got along without it up till now is beyond our comprehension. The tally board or "tally tin" is an oblong piece of wood or tin-plate, on which is pasted a piece of printed paper, the printed matter consisting of a line of figures, say from 24 down to 1. These occupy small squares on the top of the paper, and below them is a thick black line dividing them from several lines of squares below. To the left hand of the sheet there are long spaces for the reception of the particulars of the warp to be woven, and the date when it was commenced, or rather when the first piece from it was delivered to the warehouse. A sample entry would be—Sept. 5/90, 32in. 16 × 16, 120 yds., 34 T., 50 Weft, 10 pieces. These particulars, or most of them, are supplied by the taper's ticket, which accompanies the warp, and any deficiencies —usually in the weft—are obtained from the cloth-looker in the warehouse, or the overlooker of the looms. The first entry on the tally board in this case would be of the date on which the first piece was received, and it would be made under the figure 10 on the top of the printed paper. All the above particulars would also be entered in the weaver's 'cut' or piece book, in the warehouse. Thus the weaver's 'tally' is a check upon the warehouse bookkeeping, and is the weaver's receipt for work performed. The weaver has one tally for each loom, and as all the looms in a shed are numbered consecutively, and the tally contains the number of the loom to which it belongs, it greatly simplifies the matter of checking the work performed, because it constitutes a written acknowledgment from the warehouse of the mill of the number of pieces each weaver delivers and of the loom on which the work has been performed. We wonder how such a simple and obvious expedient of obviating disputes as this is, and one moreover that has been in use in other parts of Lancashire for half a century or more, should not have been adopted in Burnley long ago. In the dispute referred to, three weavers are stated to have been "had up" in the warehouse and examined on the ground that they had each delivered, or alleged they had, one more piece of cloth (and, we suppose, got paid for it) than their warps contained. They were asked for an explanation, and as they could give nothing satisfactory it was decided to stop any payment on account thereof. Now, in fairness to the weavers, what explanation could they possibly give beyond repeating their averment that they had woven and delivered to the warehouse the number of pieces which they claimed to have done? The tally system would have quite prevented this dispute, as the warehouseman would only have needed to ask for it. In the event of there being a discrepancy between the warehouse book and the tally, which would be in the hand-writing of the warehouse clerk, there was an easy method of discovering whether an error had or had not been made. That was to appeal to the figures of the weekly stock-taking in the warehouse. If there were pieces short of the kind in dispute, that would have supported the contention of the mill officials. If there were just the number claimed to have been woven, it would have proved the position of the weavers. The testimony of the taper's book we hold to be no better than the weavers' allegation, because it is at least as likely that he would make a mistake in making the entry as that the weavers should make a mistake in the number of pieces they had woven. The warp ticket and the 'cut-book' add no force to the taper's book, being based upon the entry it contains. The dispute, which has led to a strike, has been bungled and mismanaged on both sides, because the materials for proving one or the other of the parties in the right were at hand. The tally system ought to be introduced at once, and it would obviate all such disputes in future. There is really no reason why the tally should not also contain the price to be paid for weaving the piece along with the other particulars, and thus remove another cause of needless friction experienced in some quarters.

THE LATE AMERICAN COTTON CROP.

"The cotton crop of 1889-90," says our New York contemporary, *Bradstreet's*, "was the largest ever gathered, exceeding by 373,000 bales the crop of the preceding year, and by 265,000 bales the crop of 1887-88, the largest previous crop on record. The total crop, as made up by Mr. Henry Hester, secretary of the New Orleans Cotton Exchange, was 7,311,322 bales. In the light of the present complete figures it may not be amiss to recall the estimate of crop made by *Bradstreet's* on December 21, 1889, when uncertainty as to the crop was at its height, and when the generality of estimates pointed to enormous yields, the lowest estimates conceding over 7,100,000 bales, and the highest predicting 7,600,000 to 7,800,000 bales. On the date mentioned *Bradstreet's* gave the results of a special investigation containing replies from 2,280 correspondents, and stated that, on the basis of an increase in the actual yield corresponding to the increase of the correspondents' estimates over the previous year, the crop of 1889-90 was likely to be 7,211,000 bales. The actual out-turn, it will be seen, was 100,000 bales, or 1·3 per cent. larger than our estimate. The crop of the year 1888-89, it may be remembered, was also underestimated by *Bradstreet's* to the extent of 89,000 bales, or 1·2 per cent." These estimates, it may readily be admitted, do credit to the extensive inquiries, and the honesty with which they were answered, to the care exercised in making them and tabulating the results, and the unbiassed manner in which they were placed before the world. To the credit of most cotton statisticians it may be safely affirmed that in the early days of a crop there is an honest endeavour to be correct, and the results in the main are unbiassed because operators are not committed to any particular views early in the season. It is after they have commenced work and entered into considerable engagements that their views are liable to be biassed, and the adoption of their advice to become dangerous. We trust English spinners will again display the prudence which has served them so well in the past season.

THE GOOD FEATURES OF THE LAST AMERICAN CROP.

The excellent quality of the last American crop has been proved in the using, and partly to its having spun out so well may be attributed the early collapse of this year's scheming for a 'corner.' *Bradstreet's*, commenting on the crop, says :—

A very satisfactory feature of the crop year just ended was the good prices generally obtained by the producing interests for their product. The best testimony to the good results obtained is found in the movement of the crop to market. This proves to have taken place with unexampled rapidity. In his report on the crop Mr. Hester gives the total net receipts at the ports as 5,857,174, a gain over last year of 306,829 bales; the overland shipments direct to northern mills 937,471, a decrease from last year of 1,228 bales; the southern consumption (exclusive of 30,217 bales taken from southern outports) 516,677, a gain over last year of 67,719 bales. The takings of cotton during the year for consumption in the United States amounted to 2,346,152 bales. Of this 1,799,258 bales went to northern spinners, against 1,785,979 bales last season. This shews an increase of only 15,279 bales, against an increase in the south of nearly 68,000 bales. The total exports are given at 4,955,931 bales, and include 55,491 bales to Canada. This is a gain over 1888-89 of 165,253 bales. The southern consumption is placed at 546,363 bales, a gain over last year, when 481,235 bales were consumed. Examinations of previous years' records prove that, with the exception of the overland movement, every channel of distribution shews a gain this year over previous records. The exception noted is in the case of the overland shipments in the years 1888-89 and 1887-88, the movement in the latter year exceeding 1,000,000 bales.

The world's appetite for cotton seems to be insatiable, and great as has been the production both of the American, the Indian, and the Egyptian crops, it has all gone into consumption at prices that ought to have been highly remunerative to the producer. And from all appearances the season upon which we have just entered will yield a still greater supply, to be absorbed by a still greater demand. It is to be hoped that both spinners and manufacturers will, by a judicious course of action, succeed in securing a due reward for their share of the labour of transforming it into useful fabrics.

THE COTTON MANUFACTURE IN THE COTTON STATES.

The statistics of the disposition of the American crop always afford a convenient measure of the growth of the cotton manufacture in the Cotton States. This year, as will be observed from the figures given above, there is again a further increase in the consumption of the Southern mills of about 60,000 bales. This indicates a considerable extension of spinning operations, which is verified by some interesting figures given by Mr. Hester regarding the opera-

tions of the Southern mills in 1889-90. The number of mills in operation is placed at 270, with 1,565,191 spindles. Thirty-nine new mills, with 241,864 spindles, commenced working during the year, and 15 new mills were completed and will be at work this fall. Forty-four mills are idle, a number of which expect to start up again at an early date. The total number of mills in the south is now 336, with 40,819 looms and 1,819,291 spindles. The increase of spindles during the past year is equivalent to nearly one-half of the entire number reported in the south by the census of 1880. The census of that year shewed 164 mills with 561,360 spindles. The gain within the past ten years has been 172 mills with 1,226,467 spindles, the increase in the number of bales of cotton consumed having been 357,615, or more than 189 per cent. Mr. Hester has obtained reports from every mill in the south, and claims that his statement does not contain a single element of estimate. One of the curious features of this year's movement was the shipment of more than 2,000 bales of American cotton through Ontario *viâ* the Canadian Pacific Railway to Japan; 50 bales were also shipped to Japan from the port of New York. What is this item of export to Japan destined to grow into? This is an important question for the English cotton trade.

WISE MEN FROM THE EAST.

The fatuous disregard of ordinary commercial prudence exhibited by Manchester houses in their dealings with adventurers from western Asia and the eastern states of Europe is enough to make these gentry 'stare and gasp' with joy. An Oriental physiognomy and a barbaric name in the case of such a one are credentials as acceptable as a good banker's reference is in the case of an Englishman. Encouraged by the cheerful complaisance of their dupes they then set to work, reaping where they have not sown, and gathering where they have not strowed—making hay in the sunshine of the Englishman's countenance. That countenance looks blank enough, however, when on some thrice-deferred pay day he realises that the erstwhile sheik has sought again his native Syrian sands, or the charming little Bulgar boy has fled to Philippopolis. Sometimes—as indeed happened in Manchester a week or two ago—he leaves behind him a legend inscribed on a scrap of paper pinned on his office door, politely informing his kind creditors that "PAYMENT IS STOPPED," but this sort of paper is not convertible into gold, and the subsequent meeting of creditors only devises a method of throwing good money after bad. The following remarks by a correspondent at Bagdad have an immediate bearing on this subject. He declares that, "allured by the facilities afforded by European credit, our men of business, with a few honourable exceptions, have gone astray in a course of conduct that leads them into hazardous and deceitful speculations which render all calculations illusory, and every serious effort almost impossible. Everybody plunges into business. Every moment we see new and obscure persons whose origin is quite unknown setting themselves up as merchants, and directly corresponding with Europe. These improvident and unscrupulous persons, having nothing to lose, attempt the impossible. They rush into hazardous undertakings, bungle, spoil the market, and always finish by causing loss to the European houses who have been simple and imprudent enough to execute their orders and give them credit." A Chamber of Commerce has been established in Bagdad, but it has not yet effected any improvement in this matter; indeeed, nothing but the bitter lessons of experience appear to be effective—and experience comes to dwell with man when it is too late for him to profit by her instructions.

HARRIS TWEEDS.

The popularity of the rough-finished woollen goods for ladies' and gentlemen's clothing still continues, Harris tweeds and the Irish goods of a similar class being sold largely. There are some with an intimate knowledge of the trade who say that the outlook for future business is not so bright, and that attention should be paid to the production of goods having a finer finish. The almost imperishable character of the Harris tweeds which are to be seen in the shop windows of our tailors will, of course, ensure for them a long run; and the traveller who meditates a journey in Scotland or Norway does well to ensure himself or herself against the vagaries of the climate by an Ulster suit or dress of Harris tweed. Fawn, grey, and brown, either plain or speckled, seem to be the favourite shades. One of the prettiest is iris blue, and a mixture of blue and grey, known as Lovat, would make an elegant dress. A correspondent of the *Irish Textile Journal* quotes some important remarks made by a prominent merchant interested in the American trade. This gentleman, in response to an inquiry, said that "rough-finished goods have had quite a run, but it is nearly over, and now the manufacturers and the Irish Woollen and Export Company must give us some smooth-finished fabrics of the highest quality. Indeed," he added, "it is chiefly on that account I have come to Ireland at this time." Mr. Sherman paid a high tribute to the company just mentioned. The friezes sent out by them led the markets in all the Northern States, but mild winters were against the extension of the trade. American mills, too, had taken to imitating the goods, and, as usual, inferior articles sold as "genuine Irish" had in places discredited the imported cloths. On the future of the trade he said "Irish woollens have come to stay with us; but in the face of the new tariff it will be imperative on Irish manufacturers to devote their attention to the very finest grades of goods if they mean to advance, or, in fact, even hold their ground in the American markets." This statement confirms what we have heard elsewhere, and it would be well if those concerned in the matter gave it attention.

TRADES-UNIONISM AND POLITICAL PARTIES.

Government by party has long been recognised as subject to serious drawbacks, as party politicians may always be found making obeisance to those who possess or are supposed to be able to control votes. Other interests, whatever may be their merits and importance, are neglected or ignored if attention thereto is not likely to influence votes. Further than this, there is also a tendency evinced by both parties, whether in or out of power, to pander to such interests. The recent Trades-union Congress has drawn out a conspicuous exhibition of this weakness. The Gladstonian journals gave the most fulsome flattery to the members of the Congress, and exalted its importance very unduly. On the other hand, the Home Secretary, with his usual maladroitness, caused it to be announced at one of the sittings of the Congress that Mr. Thomas Ashton, the Secretary of the Operative Spinners' Association at Oldham, had been raised to the local bench of magistrates by the Duke of Rutland, the Chancellor of the Duchy of Lancaster. This it may safely be presumed was Mr. Matthews' counterpoise to the flattery of the Gladstonian journals—"Codlin's your friend, not Short." Both parties seem to be concurring in making trades-unionism into a golden calf, which they are assiduously worshipping. In the conduct of elections, however, there is something more than votes needed, and it may be just as well for employers to consider how much of this something else—which is labour and money—they can justly give to parties that are so much inclined to shut their eyes to employers' interests and to open them very wide to look favourably upon the measures sought to be promoted by their persecutors. Truly the patriotism of professional politicians is not of a high order.

RUSSIAN ENTERPRISE IN TRADE.

The world is very frequently treated to items of news regarding the manner in which Russia is pushing trade in every direction. All these statements may be very true, but they seem very contradictory when regarded in connection with the equally frequent intimations that the administrators of the empire are constantly increasing the tightness of the tariff bonds, so that it is daily becoming more difficult to get any external productions over the Russian protective barriers. The two movements appear to us to be destructive of one another, because the countries to which Russia desires to sell need the wherewithal to buy, and if Russia will only take money her customers must sell something to other people before they can obtain it. Here is an item of news which will illustrate what we mean:—"According to the *Revue d'Orient*, a commercial and industrial society is being formed at St. Petersburg with the object of pushing the trade between Persia and the neighbouring Russian districts. Its operations will begin with the establishment of a number of depôts and offices in the Persian province of Azerbiban, and especially at Tafreez, where Russian manufactures already now find a ready market. It is affirmed that the society has already obtained a large order for shawls of Persian designs." This announcement, which is similar to many others, was sent from Vienna on Monday. Now where will the Persian merchants get money to pay for these Russian goods when the Government of Russia practically prohibits Russian sellers from taking anything else? It seems to us that such a one-sided trade as this must be both limited in amount and duration.

"MAKING TIME."

Whether the saying that "honesty is the best policy" is a proper embodiment of the principle of conduct, or lacks somewhat in moral tone may be a question; but it is quite certain that there are too many persons on whom a higher motive than that of selfishness and present advantage will have little effect: they are apt to look upon work as only just good enough to make a living out of by spending as few hours as possible in a day. There can be no doubt of the truth that honesty is really a benefit to any man, and its converse is also true, that unfairness in dealings does in time work injury to him who practises it. The employé who looks upon his employer as a victim, and his invested capital as a goose to be plucked, will eventually find his services dispensed with, or that he and his work are estimated at their real value. In almost every shop there are to be found men who fish for "loafing jobs," "keeping jobs," "sitting-down jobs," and, having got one of this class, deliberately proceed to arrange for "making time," and deliberately calculate on keeping the work "doing," and delaying its being "done." Such a man from time to time hoodwinks foremen and employers by making a great show of being busy when anyone in authority is about;

fussing along with a busy frown on his brow, and an oil can, hammer, or rule in his hands; he alludes to his job as one that cannot be hurried and one that requires great carefulness and moderate progress; he finds a hundred ways to keep his easy job in the works. The tricks and dodges of the time killers are well understood by workmen: an unusually long visit to the smithy to get tools sharpened or tempered, a frequent tinkering with his lathe or belts, a pretence of fixing some part of his machine, or of arranging some attachment—these and many other ways are employed by the dallier in the attempt to make his easy job prove a long job. He will "make time" every day, and to superficial observation he is doing his work. But he is careful not to strain himself. He gives in his time with as honest a face as the honest workman who has pushed his job as fast as his use of the tools and sincere desire to be fair allow, and in many cases his record is unquestioned. We have known leaders and other officials, strangely enough, to be picked or rather elected from such dodgers; the honest, conscientious workman is generally of a retiring disposition, with no ambition to become what he laconically calls a "spouter with a good gift of the gab." These men are for the most part endowed or blessed with good lungs, self-sufficiency, and inflated oratory, which has a fascinating effect in a meeting-room, or street corner, or bar parlour of a public-house, and we are sorry to say that such individuals become more numerous every day. It is high time that men who take a pride in their work and who willingly spend their leisure time in digging deep down into the foundations of their calling, who want to understand it all the way from bottom to top, should try and eliminate from their midst these parasites who eat into the very vitals of all healthy, honest occupations, and sow distrust between employers and their workpeople to the injury of both. Such men are the secret executive councils who band working men into unions, reduce them to blind slavery, and then pull the strings of the marionettes to which they have reduced the working men. They quite invert the old saying that "he who pays the piper has the right to call the tune." The modern trades-unionist receives the pay, selects the tune, and makes his victims dance thereto, however disagreeable it may be.

FAST *v.* FUGITIVE COLOURS.

The lecture by Prof. Hummel on this subject, given before the British Association, which was reported in our last issue, is a very timely one. The lecturer placed the matter very fairly before his hearers, and gave a lucid account as to the meanings to be attached to "fast" in relation to colour in dyed and printed fabrics. The purpose of the paper was to shew that the brilliant coal-tar colours did not deserve the almost universal condemnation hitherto accorded them, especially by Mr. William Morris and the so-called æsthetic school, who are never tired of praising up the natural colouring matters and running down coal-tar colours. We have had occasion to combat these ideas before, and it is quite time that they died out. Of course, there *are* fugitive coal-tar colours, but there are also fugitive natural colours. Some of the coal-tar colours—alizarin and aniline black, for instance—are faster than any natural colours; while on the other hand the natural colours are nowhere in comparison with the coal-tar colours for ease and certainty of working, nor for brilliancy and purity of tint. We are not going to depreciate natural colours; they have their uses, and we do not desire to see them displaced; but the coal-tar colours also have their uses, and no matter what certain writers think or say, they have made a place for themselves in the dyehouse, and "have come to stay."

MR. THOMAS BIRTWISTLE'S MANIFESTO.

Mr. Birtwistle at the close of last week issued an address to the District Committee of the Northern Counties Weavers' Association, explaining the action he took at the late Trades' Congress. We need not go over it, its substance having already appeared in our columns. Much was said in the public press of the rowdiness of the proceedings, but such reports, it appears, fell far short of the truth. The manifesto is an iustructive document, and we notice it for the purpose of suggesting that if not already being done, it should be printed and distributed throughout every weaving shed in Lancashire. We feel concerned for the honour not only of employers in the textile industries, but of the operatives also, and do not think that such honour will in any way be enhanced by association with the elements that preponderated in the late Congress, or by the adoption of the views they are endeavouring to promulgate. It is to be feared that in the future the noisy contingent who brought such discredit upon the Congress will control its proceedings; and in that event in the interests of the operatives of the textile industries themselves, their withdrawal will be imperatively required.

INTEGRITY AND TRUTHFULNESS.

It is often urged by trades-unionists, and we find the statement put prominently forward by the organ of the factory operatives yesterday, that foremen and managers in our mills are mostly pushed into their berths by influence of a questionable character. "This," we are told, "is more the rule than the exception since the liability principle came to the fore, and it is this fact which is at the bottom of most of the disputes which take place at the mills worked on the system we have mentioned. *There are large numbers of managers and mill directors who won't admit the work is bad*, unless the machinery has to be frequently stopped to enable the workers to get a clear start in order to keep up with the work for a short time." If this statement be true, we are sorry for the general character of the operatives, because it is from their own ranks these men are drawn, and it is very difficult to conclude that the principle governing their selection results in always getting the untruthful and dishonourable men. We would rather think they are good fair average representatives, or even rather better than that. If not, we shall be forced to the conclusion that the whole are a bad lot, even those who enrol themselves in the unions, "and find their way to the front." It might here be pertinent to ask whether it has ever occurred—we won't say exactly to the writer of the article from which we have quoted, but to any leading officials of the spinners' union, to be called in to examine the quality of the work in progress, of which the operatives were complaining, and to find that no just complaint could be made; yet because such allegation had been made, to back it up and assert the same thing in the presence of the employer and his representatives, and then to go away, and when he had got the representatives of the operatives to themselves to declare that "nothing ailed it, but that he was bound to say it was bad because they had complained of it." If this be true, which we have good reason to believe is the case, amendment is wanted in more places than amongst employers, their managers, and their officials.

Articles.

THE PROBABLE COURSE OF PRICES IN THE COTTON MARKET.

We have already given a forecast of the effect of this year's great collapse of the corner in cotton upon the Manchester market, and already the repudiation of contracts has been attempted, and will no doubt continue to be tried on, much to the disadvantage of both spinners and manufacturers.

At the moment, however, we think it well to call upon the trade to take a calm view of the situation, and to consider well the factors which this season are most likely to play no inconsiderable part in controlling the future of the Liverpool Cotton Market.

The first in importance is a negative one: it is the fact that the chief 'bull' in this and last year's corners has received his quietus, and therefore one, and that the greatest, element of possible disturbance has been removed, which otherwise would have played a great part in the formation of another corner in the coming season. As he is not likely to have a successor this year, this fact affords strong presumptive evidence that there will be no corner attempted. It is safe, therefore, to assume that the course of the market will be a natural one, if only the trade will not lose its head. They very prudently bought forward last year, as we strongly advised them to do, and the result has proved to their advantage in a high degree. But with no "bogey" in hiding this season it would be folly to act as though there was one, and we would urge them now not to "rush in," but rather "fear to tread" as yet in last year's footprints. It should be borne well in mind that the crash has come in the Liverpool market a month earlier than was anticipated even by those who felt sure it would eventually come, and the fall in prices has been so great that at the moment of writing we are within measureable distance of the lowest prices touched last year, and this, it must not be forgotten, *before* the weight of the new crop has been felt. When the new cotton begins to arrive in large quantities, then will be the time to look for the effect of the natural conditions. This will be a tendency to give way, which is always caused when "supply overtakes the demand." Barring the hardening effect which would result from Oldham especially, and the men of the smaller towns generally, following suit and rushing in to "buy all along the line," a fall at least of another ¼d. will be witnessed under the natural pressure to sell by shippers. Even then we might not touch the bottom. It is, of course, easy to be wise after the event. "I told you so," gives the one who has made the mistake little comfort. It is easy, too, to write vaguely and generally, and to give abundance and variety of advice, and prove oneself right, whatever turns up, as is so often done by the "prophets." We would carefully avoid writing any more strongly than to point out forcibly to our readers the conclusions at which we have arrived after looking at the matter from every available point of view. As to the coming crop all authorities speak favourably as to its volume and quality, and it may certainly be expected to be fully up to the average. We have ourselves examined several shipments of the new Texas cotton, and for colour, cleanliness, and staple, nothing is left to be desired. (The cotton loses 5·90 only in the working.) A larger quantity than could well have been anticipated will be here earlier than usual, and spinners will have every opportunity of

mixing good old cotton gradually with the new, and getting both at a reasonable price on the spot. Why, then, when everything certainly seems to tend to a lower level, be in a hurry to secure at present prices, what may be had possibly and probably at ¼d. less. We regret to learn that many Oldham limiteds have by their action in buying largely for forward delivery, as we think, jeopardised their interests, and prevented the market taking its natural course; whereas by buying quietly, as sellers were easy, they might have got in at lower rates. One buyer alone who regulates several limiteds has, so report goes, already bought cotton for the season through. This might have been a wise policy if there was a good margin on yarns *already sold*, but as a speculation we fear it may be bad business. The only element in favour of a temporary stiffening of prices is this (excepting, of course, any serious damage to the crop from frost): that the firms who combined to 'bear' the market against the fallen Cotton King have now in their possession the large quantities of cotton which they intended unloading into his lap, but which they have had to keep at the prices of the settlement; the large anticipated profits have vanished, leaving them to get out as best they can. What their losses may be is their own concern, but their chief anxiety is to "ginger" the market until they have got quit of their stock. When they have done this the market will go on the even tenour of its way.

Our readers will take the foregoing remarks for what they are worth, but it may be permissible to remind them that we hit the mark at the beginning of last season, as we then advised buying gradual deliveries on the basis of 5¼d. and 5½d. This year we advise hand-to-mouth purchasing until buyers can get in upon forward contracts at 5¼d. to 5½d.

THE LACE TRADE ABROAD: THE CONTINENTAL OUTLOOK.

We have heard so much of the trade depression prevailing in Nottingham, that the fact is overlooked by many that all is not all *couleur de rose* amongst the lace manufacturers of the Continent. This was pointed out some time ago in one of our market reports, when reference was made to the curtain industry of Plauen. Indeed it seems that after crushing Nottingham the foreigners have now turned and rended one another, for the accounts which reach us both from the French and German centres of the lace trade shew that very deep depression prevails there. The position is perhaps the most critical just now at Calais, for the operatives of that town have commenced an agitation for higher wages, and there is much consternation amongst manufacturers thereat. They say that for months past business has been in a wretched condition, and the greatest difficulty has been experienced in meeting bills as they fell due. Indulgences have had to be asked for, but at last—and this is the *crux* of the whole trouble—the sellers of the raw material, who have, practically speaking, been bearing the whole of the strain imposed by the weakness of their customers' position, are now becoming alarmed and are pressing for payment.

The merchants naturally object to provide the capital for carrying on the lace trade of Calais, and they are well aware that the longer the present system is adhered to the less chance will they have of being paid in full. Such a condition of affairs cannot possibly continue for any length of time. A crash must come eventually, and for this wise heads are preparing. The bankers, who came forward freely in the past when danger presented itself, are now keeping in the background. It is to this circumstance that producers attribute the action of merchants supplying the raw material necessary for the carrying on of their business. The wages agitation now disturbing the minds of Calais people can lead to nothing, says one authority, when there are no racks at work. But considerations of this description have not been sufficient to deter the operatives from enforcing their demands by every possible means, and by attacking the "enemy" in detail they have been able to obtain concessions which have alarmed the Chambre Syndicale of manufacturers. The latter are proposing a standard list, which they have tried to make acceptable to the workmen by stating that it merely defines a limit below which none of them will go, although higher prices than it indicates may be paid. These terms, however, do not appear to have commended themselves favourably to the parties interested, and the manufacturers have now issued a proclamation stating in effect that whenever the factory of one of their body is boycotted, a general lock-out shall take place if it be shewn that the employer is paying the tariff proposed by the Association, and if all means towards conciliation prove fruitless. Nottingham unionists, it may be mentioned, are encouraging the Calais operatives in their present struggle, and have assured them that no labour from Nottingham shall take the place of any that may be displaced at Calais should a lock-out occur. Such is the position, which we are justified in speaking of as critical.

The question that will at once arise in the minds of Englishmen when such facts as these are made known will be: What is to be the outcome of all this agitation on the Continent? What effect will it have on us at home? Is Nottingham at last to enjoy the benefits of a favourable change? It is difficult to reply to such queries, so much depends upon the outcome of the labour agitation abroad. We may point out, however, that at Caudry the employers have not had to face such an agitation as that which is now in progress at Calais, and the first-named town will therefore take away from Calais the commissions formerly placed there should the cost of production be increased. Already we believe Caudry possesses great advantages in this respect over the other French lace centre, and the *Impartial* of Saint Pierre states despairingly that the manufacturers of Caudry have their workmen for "almost nothing." These are therefore jubilant at the news from Calais, which to them means steady work throughout the winter. It seems to us that the evils under which the lace trade suffers are not local, for as we have shewn Nottingham is not alone in its misery. The mischief of the whole thing is that production here and abroad has increased in a far greater ratio than has consumption, the natural consequence being that stocks have accumulated while prices have literally tumbled downwards. "Ten years ago," said a Manchester merchant to us the other day, "I sent my buyers to Nottingham for sets of Spanish and Chantilly laces, the cost of which ranged from 8s. 6d. to 30s. The lowest price of ten years ago" he added "represents the topmost limit to-day." We need say no more after this.

At Akbass in the province of Alleppo, where is a mission of the Lazarist fathers, sericulture has been carried on for 10 years on an extended scale. The general results for the whole region have been satisfactory. The total amount of the cocoons is estimated at 100,000 to 125,000 kilos. Two thirds were sold on the spot to speculators from Bayreuth.

Reviews of Books.

All books reviewed in this column may be obtained post free at the published prices from Marsden and Co., "The Textile Mercury" office, 23, Strutt Street, Manchester.

HOLIDAY RAMBLES NEAR THE RIBBLE. By W. H. BURNETT; with illustrations by Herbert Railton, A.R.A. Blackburn: "Lancashire Express" Office. Manchester: John Heywood.

Descriptive topographical literature of a popular character relating to Lancashire grows apace. This is a fact indicative of a healthy feeling in the county of mechanical and consequently densely concentrated industries, and correspondingly crowded populations. Notwithstanding that these closely related facts have done much to deface, or at all events smear and blight, much of the beautiful natural scenery of the county, yet they have not succeeded in obliterating it entirely. From the centre all round to the outskirts, there are many beautiful spots that can be discovered by those who care to devote a little time to the search. It is, however, on the margin of the manufacturing area that the purest and brightest are found, and also the greatest abundance of objects of antiquarian interest. Within that area the industrial developments of the past century have so completely revolutionised the superficial aspect of the county that in the process almost all of the latter that our ancestors had left us have been buried or swept away. Thus one great source of interest has disappeared. But the grand old hills and beautiful valleys remain, these being ineffaceable by any efforts that man can bring to bear upon them; the rivers, however, he has succeeded in destroying by transforming them into open sewers. It is quite time that a conscientious effort was made by the manufacturing communities who receive so much benefit from the streams to cease to abuse them in the disgraceful manner so commonly practised. Under present conditions this, however, is almost too much to hope for. But these unpleasant facts perhaps only intensify our appreciation of the scenes which lie beyond range of their influences, and to which the populations of Lancashire towns fly away on every available opportunity in the shape of a holiday. Still, most of the popular resorts are too distant to be available for use in those odd days and half-days that occasionally fall in the way of busy men, and which owing to ignorance of a good way of spending them are often wasted, or worse. This ignorance ought to be removed, and it is owing to the laudable attempt to clear it away that we owe the growth of the literature to which we have referred above.

Of the various districts dealt with in this manner, one of the richest in interesting material is the lower valley of the Ribble, say from Chatburn down to the sea. Its natural features and historic associations have secured for it a reputation much beyond a merely local fame. The little volume under notice is devoted to the pencil notes of scenes natural and historic, and the reflections induced by brief rambles amongst them. The salient features of the scenery rarely escape observation, whilst historic spots and events are quickly seized upon and are made to furnish a peg upon which a moral reflection can be hung. If the book has a fault it is, in our opinion, that there is a little too much of the latter and too little of the former. People's appetites for morals are not always urgent; when they go out for a holiday it is almost safe to assume that they don't want a sermon either during its course or at the end of it. Hence our objection that the proper proportions of holiday matters and moralising are in inverse order to what they ought to be. Under the circumstances in which the sketches were written, we are willing to admit that the observance of due proportions in this respect may have been difficult, they having been contributed to the local press. In reprinting them in a collected form an opportunity occurred of which the author might have availed himself for remedying the defect. He, however, has not done so, and the omission has been an injustice to himself as well as to the reader. We

do not wish our readers to infer, however, from these remarks that the volume is not worth the necessary investment of money needed to purchase it and the time to peruse it; such a conclusion would be a mistake. Readers contemplating the utilisation of a spare day or a few hours in the Ribble Valley anywhere from Langho, Harwood, Whalley, Mytton, Ribchester, and the adjacent country districts cannot do better than first peruse the work. The illustrations by Mr. Herbert Railton, A.R.A., are little gems. They include sketches of Ribchester, Stydd, Mytton, and Whalley old churches.

MESSRS. GEORGE BELL AND SONS, London, will shortly publish a work on "Colour in Woven Design," written by Professor Roberts Beaumont, author of "Woollen and Worsted Cloth Manufacture," etc., and Director of the Textile Department of the Yorkshire College. The book, which will be profusely illustrated, both with coloured plates and original drawings, will deal with the principles of colouring as they relate to all classes of loom products, whether made of wool, worsted, cotton, silk, linen, or other materials.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, SEPT. 6TH.

Dress goods are in brisk request, and the market is very firm. The South is the great buyer just now, business being more prosperous than has been the case for years. Any jobbing house transacting a representative business would confirm this statement as to the extent of the purchases now being made in the cotton-growing districts. Choice makes of goods—such as plaids—will probably be scare ere long, but, speaking generally, there is no present scarcity. A significant feature in the situation is that houses which formerly disdained to look at domestic goods are now "climbing down," and are willing to treat with native manufacturers.

Tefft, Weller and Co. have purchased the entire stock of dress-style fall ginghams on the market, the prices paid being about the same as those current at the commencement of the season. The position is a strong one, and manufacturers are hopeful.

Under the heading, "Ready to Weave Linen," a leading house, whose name for business reasons is withheld from publication, writes to the *Dry Goods Economist*, stating that although at first opposed to the advanced schedule on linen goods, it is now convinced absolutely that the cheaper grades of coarse linens can be made in this country. For the present, however, and until we learn how to overcome unknown difficulties in the manipulation of linen yarns by the count, the firm referred to does not think we can produce fine hand-embroidered linen handkerchiefs, even if the duty were 1,000 per cent. It considers, therefore, that it is useless to advance the duty to 60 per cent., as has been done in the Senate Bill.

An interesting fact in connection with the McKinley Bill is that retailers have advanced prices from 5 to 10 per cent.

THE important wool-spinning factory of Quasner and Möller, in Lodz, has been completely destroyed by fire.

MESSRS. ADLEY, TOLKEIN AND CO., of London and Blackburn, have found it necessary, owing to the continued increase in their Indian trade, to open a branch house in Bombay, and have confided the management to Messrs. Sorabjee. Shapurjee and Co., Khetwady, who now hold considerable stocks of all sizing materials, clay, Lancashire size, etc. Our Indian subscribers can therefore now place their orders directly with Messrs. A. T. and Co. We are informed that mills experiencing any difficulty in obtaining special weights on particular counts of yarn can obviate all obstacles with the aid of Lancashire Acme size, prepared for the purpose. This enterprise will meet a want in the Indian trade, and Messrs. Adley, Tolkein and Co. may be wished every success in their venture.

A CREFELD firm is about to erect a power-loom shed at Dusterhof, near Willich. Building operations will commence next spring.

WOOL MUSEUM AT SYDNEY.—A recent development in the wool trade of Sydney is the establishment of a wool museum by J. H. Geddes and Co. (the Pastoralists' Association), in the association's offices, near the Circular Quay. The museum is a large room admirably fitted with 220 compartments, apportioned into districts, which will contain only the most choice fleeces, from sheep bred in respective districts, arrived at under competitive examination at the different shows, for the most valuable fleeces shewing the highest pecuniary yield. These fleeces will be marked with breeder's name, value (arrived at by wool experts), weight, age, and date of shearing, and will be on exhibition until superseded by next year's prize fleeces. Assortments of wool in various stages of manufacture, and a fine collection of South American wools are exhibited, while books on sheep-breeding, artificial grasses, and upon other subjects of interest to pastoralists, are placed at the convenience of the visitors.

Letters from our Readers.

QUERIES.

Could you favour me with makers' names of good machinery for cutting shirtings, woven to double width actually required, to half their width? W.

ANSWERS TO CORRESPONDENTS.

W. (Manchester.)—If your enquiry relates to the cutting of a cloth woven in double width during weaving, we know of no better arrangement than a small knife carefully arranged upon the cloth carrier beam of the loom, between the inner selvages, which it cuts apart as the cloth is being woven. If it be a cloth woven in one width which it is desired to cut down evenly through the middle, we are not aware of a better machine than the guillotine.

R. F. (Bombay).—The allowance of warp that must be made to obtain a given length of a piece of cloth must depend upon the number of picks and the counts of yarn put into the cloth. The more picks put in, the greater must be the allowance; and the heavier or lower the counts of weft, the greater must be the allowance. The converse holds good when fewer picks are put in and finer wefts are used. In the medium ranges of cloths about 5 per cent. allowance will cover the requirements.

H. W. (Bombay).—We are not aware that any series of replies to the question in cotton spinning set at the examinations in May have been published this year.

E. R. (Paris).—Your communication to hand for which we thank you.

J. P. (London)., C. C. (Liverpool)—Letters received.

Designing.

NEW DESIGNS.

WOOLLENS.

For fine semi-rough woollens *Design 179* should prove very effective either in solids or neutral mixtures. The following colouring will prove very beautiful :—

Warp.

2	ths.	20 sk	French grey,	3	ths.	40 sk	French grey,
10	,,	,,	dark grey,	6	,,	,,	dark grey,
2	,,	,,	French grey,	2	,,	,,	French grey,
6	,,	,,	dark grey,	10	,,	,,	dark grey,
3	,,	,,	French grey,	2	,,	,,	French grey,
2	,,	40 sk	dark grey, and orange twist.				

[12's reed 4's.]

Weft.

All 20 sk French grey.
48 picks per inch.

Perhaps a more beautiful effect than the above would be obtained by inserting dark brown or brown mixture in the place of the dark grey and brown and white twist (40 sk) with about 3 twists per inch in the place of the French grey warp; the French grey weft to remain the same. The brown and the French grey being practically complementaries will cast quite a sheen over the fabric, particularly if the white is good.

This cloth should be put in the stocks long enough to raise a little fibre on the face, and should be cropped so as to shew up the make, at the same time allowing the colours to merge somewhat into each other.

Since blue colourings have been prevalent for some time we may now expect a gradual change to the complementary, viz., brown colourings. Our textile colourists will therefore do well to see that they have in hand a well-assorted range of browns and brown shades and tints of the other colours. The following colouring is an excellent example of a harmony of analogy:

4	ths.	medium brown grey,	4	ths.	medium brown grey,
1	,,	light yellow,	3	,,	light brown,
4	,,	medium brown grey,	3	,,	stained white,
4	,,	light brown grey,	3	,,	light brown grey,
4	,,	medium brown grey,	3	,,	stained white,
1	,,	light yellow,	3	,,	light brown grey.

In the next two stripes the yellow thread to be changed for one of bright orange.

The weft should be all medium brown grey with checking threads of yellow and orange.

The fact is worthy of notice that a combination consisting, like the above, of all mixtures or solid colours possesses a soft, beautiful appearance which the introduction of twist yarns would wholly destroy.

Design 180 is a modification of weave introduced for modifying the colouring effect. The following system of colouring is intended :—

Warp.

2	ths.	very dark brown,	2	ths.	very dark brown,
4	,,	very dark grey green.	24	,,	black.

Weft.

Same as warp.

We here get a larger proportion of the green than we do of the brown, but since the brown is every 8 picks flushed up the two complementaries are balanced and a beautiful effect is obtained. Both shades must be very dark, or else the 24 threads of black must be reduced to 16 or 8, to prevent too strong a contrast between check and ground.

WORSTEDS.

A good effect for solid colours is given in *Design 181*.

Warp.	*Weft.*
All 2/40's black,	All black.
18's reed 4's.	72 picks per inch.

Marks indicate rises in this case.

The whole design practically consists of a 10-end twill, modified for the stripe, which is edged with two threads working together so that the whole effect is capable of being produced on 12 shafts. Colourings may be introduced as indicated for *Design 180*, or two mohair threads may be introduced in the cutting threads up the side of the stripe, in which case the following would be effective :—

2	threads	very dark brown	mohair,		
8	,,	,,	,,	,,	worsted,
2	,,	,,	,,	,,	mohair,
30	,,	black.			

If the dark brown be too striking in the stripe its effect may be neutralised by introducing a very neutral mixture yarn for weft, or a good effect might be obtained by using rather a stronger colour and wefting 2 and 2 or 3 and 3.

DRESS FABRICS.

We cannot pass over *Design 179* without calling attention to its utility as a dress design. The effect produced by reversing the twill may be termed a fancy diaper, while it is constructed on a reversible principle as indicated by the type.

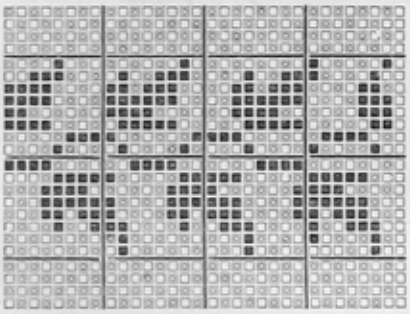
Warp.	*Weft.*
All 30's crossbred.	All 30's crossbred.
16's reed 4's.	64 picks per inch.

So far goods of this type have been almost exclusively confined to solid colourings, but why not employ mixtures? Red, white and green mixture with brown, yellow etc., mixtures, and many other yarns would be very effective applied to patterns of this type.

FANCY STRIPE.

This design is for a fancy stripe in silk, cotton, linen, woollen, or worsted. The particulars are as follows :—4 shafts for plain ground

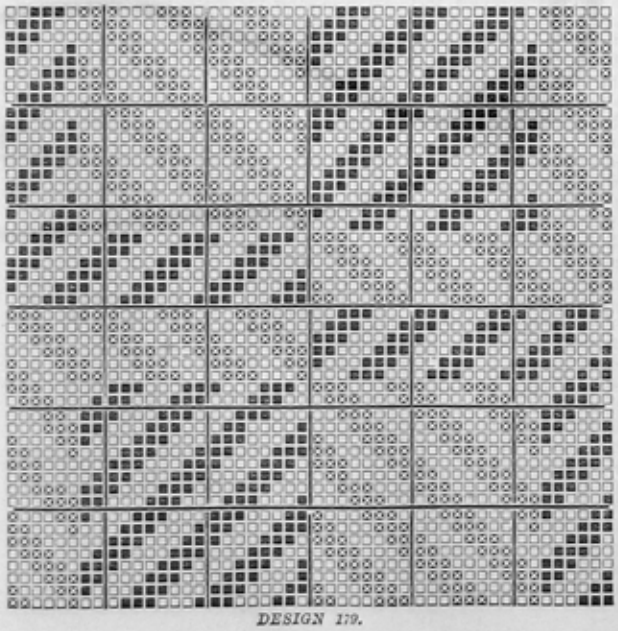
16 for figure, two in a heald of 24's cotton-twist for warp, 72 ends in one inch. 48 picks of 20's cotton weft, two in a shed. This will make a matting or, as it is now called, a canvas cloth. If a silvery-grey linen be used for weft, the counts must be 50's; if worsted or angola weft the counts would be 30's. Silk waste might be used for weft, with great advantage, as it is the weft that gives the figure its greatest effect, particularly so if the material is glossy, or shews very bright, when it is pleasing and in good taste. The plain stripe, 32 ends, 2 in a heald, one heald per dent; of delicate tints, such as corn, maize, lemon, anemones, or a light mauve shade, pink, water-green, blue, white, and, in fact, any or all light shades are permissible. The figured stripe contains 32 ends two in a heald, one heald per dent of dark shades—dark navy blue, chocolate, maroon, deep browns, grenat, seal brown, deep browns, myrtles, bronzes, black, dark dahlia, and plum. For a sea-side style, either as a dress, under-vest, or a waistcoat material, it ought to be a success. The figure is neat—neither loud nor obtrusive. As will be seen in the design, it is only a simple sprig, the value of which is enhanced by the delicate tints of the plain stripe or ground, which is a marked though far from violent contrast to the dark shades of the figured stripe. It must be distinctly understood that the same tint of weft must be used as that composing the warp of the plain stripe. This gives force, effect, and beauty to the sprig, which is thrown out from the surface clear and sharp as if in relief. If any other colour of weft be chosen, a blurred, inharmonious, sketchy outline will be developed, anything but agreeable, and far from pleasing to the eye.



FANCY STRIPE.

AFRICAN STRIPE.

In former issues of this journal we have advocated the claims of the African markets upon our manufacturers for cloths suitable to the climate and taste of the people. We again venture into the field with a pattern which ought to command some attention, both for texture and ornamentation sufficient to please the eye of the most fastidious negro. On 12 shafts, 8 to round (see pegging plan), 60 reed, two and three in a dent; warp 24's; weft 20's; all dark blue. The four shafts marked 1, 2, 3, 4, in the pegging plan are for the plain or dark blue portion of the warp, which is two in a dent: the shafts marked 5, 6, 7, 8, 9, 10, 11, 12, are for the fancy coloured stripe, three in a dent; selvages pure white with only half pattern of the ground at each side before commencing full pattern. Draft and pattern of warp: 72 ends of dark blue, 6 of bright yellow, 2 white, 2 yellow, 2 sky, 4 dark blue; all these two in a dent on the shafts marked 1, 2, 3, 4. The fancy stripe or dart is 1 white, 1 red, 1 white, 1 red, 1 white, 1 red, 1 white, 1 red, on the shafts marked 5, 6, 7, 8, 9, 10, 11, 12; then 1 of white on the 11th, 1 of red on the 12th, 1 of white on the 9th, 1 of red on the 10th, 1 white on the 7th, 1 of red on the 8th, 1 white on the 5th, 1 of red on the 6th shaft; 4 dark blue, 2 of sky, 2 dark blue, on 1, 2, 3, 4 shafts; 1 orange, 1 black, 1 orange, 1 black, 1 orange, 1 black, 1 orange, 1 black, on the shafts 12, 11, 10, 9, 8, 7, 6, 5; 1 orange on the 6th, 1 of black on the 5th, 1 of orange on the 8th, 1 of black on the 7th; 1 of orange on the 10th, 1 of black on the 9th, 1 of orange on the 12th, one of black on the 11th shaft: 2 dark blue, 2 of sky, 4 dark blue, on the shafts marked 1, 2, 3, 4; then 1 red on 6th shaft, 1 white on 5th, 1 red on 8th, 1 white on 7th, 1 red on 10th, 1 white on 9th, 1 red on 12th, 1 white on 11th shaft; 1 red, 1 white, 1 red, 1 white, 1 red, 1 white, 1 red, 1 white, on shafts 5, 6, 7, 8, 9, 10, 11, 12; then 4 dark blue, 2 sky, 2 yellow, 2 white, and 6 yellow, complete the pattern; total ends in both stripes, 168, or 120 on the four plain shafts, and 48 ends on the other 8 shafts. Lest the warp might be turned upside down in beaming, let the light ends (the white and orange) begin the draft on the shafts marked 5, 6, 7, 8, 9, 10, 11, 12. If these details be strictly followed out no mistake can possibly take place, either in warp pattern or draft. We are particularly anxious that this make of cloth should have a fair trial. The colours are all that is desirable, and we see no reason why a good trade ought not to take place with proper samples brought under the notice of buyers.



DESIGN 179.

AFRICAN STRIPE.

WORSTED COATINGS.

Design 182 is for a worsted coating. It consists of a check, the interior portion of which is formed by a warp-twilled rib effect, and the outer portion of the twilled hopsack, which gives a finer appearance than the interior portion, and thus clearly demarks the check. A solid colour may be used, or the following system:

Warp.

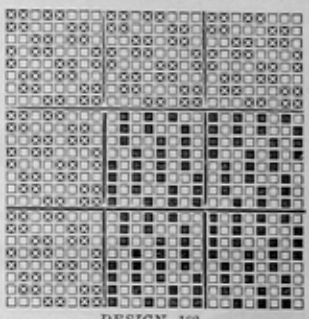
8 threads 2/50's black
1 thread 2/50's dark grey } repeat for
1 „ 2/50's black } 16 threads
19's reed 4's.

Weft.

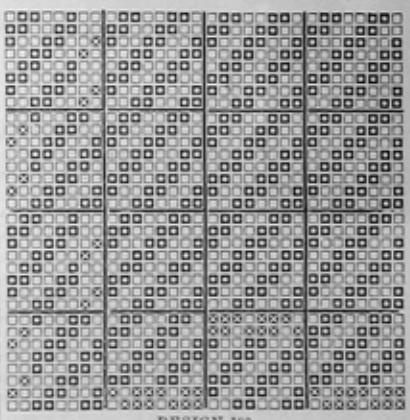
All 25's black; 76 picks per inch.

The thread of grey and black form in the centre portions respectively twill of grey and black. Instead of the dark grey, black worsted and white silk are very effective.

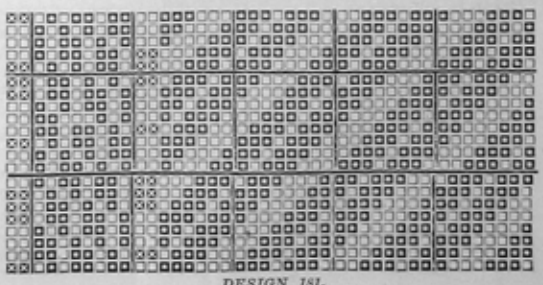
The pattern as given here will draft on to 16 shafts and may be extended almost indefinitely by the same means. For a heavier cloth a warp back should be introduced.



DESIGN 182.



DESIGN 180.



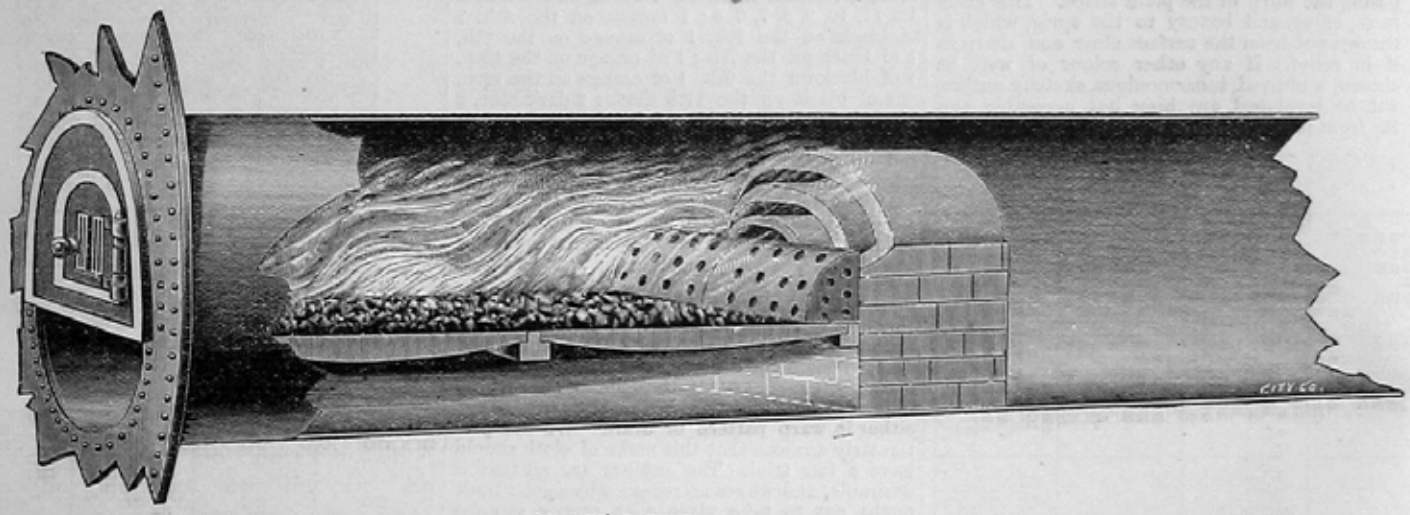
DESIGN 181.

Machinery and Appliances.

GREAVES' NEW SMOKE CONSUMER.

MR. W. MC G. GREAVES, 6A, FOUNTAIN-STREET, MANCHESTER.

The continually expanding area of country covered by mills, sheds, works, and manufactories of various kinds in what are known as the manufacturing districts, and the growing pollution of the atmosphere that results, are raising the question of the means of purifying it into one of the most pressing importance. In all our leading manufacturing centres a crusade has been inaugurated against offenders, and numbers of manufacturers and spinners are being hauled before the magistrates and fined for the offence of discharging black smoke into the air. It is often pleaded in excuse or mitigation of the offence that it cannot be prevented, because the skill in the firemen cannot be obtained, and if it could be, it cannot be relied upon for being continuously exercised. It is also generally urged that none of the appliances



GREAVES' PATENT SMOKE CONSUMER.

that up to a recent date have been offered to the public as smoke consumers are effective. To a certain extent these contentions have carried some weight with them, and deservedly, but they can hardly be allowed to do so much longer. In our opinion it is clear that we are within a measureable distance of the time when the skies of our towns and cities should be, if not as clear as those of our country districts, at least as bright and fresh as the same places usually appear on a Sunday, and this, it must be admitted, is much better than on a working-day. With the means at hand for accomplishing this, we can have no sympathy with offenders, however often or however heavily they may be mulcted for discharging black or brown smoke into the air we breathe. The means of preventing it we hold are to be found in the smoke-consuming appliance of Mr. Greaves, which we described and illustrated in our issue of Jan. 25th last. Since then it has been applied to no fewer than 160 boilers in Lancashire, with the most satisfactory results. As many of our present readers may not have seen or heard of the appliance we make no apology for again devoting a brief space to its description, and to illustrating it with a new block, in view of the increasing attention to the question that is being enforced upon the trade.

As stated in our previous notice, the appliance consists of one, two, or three blocks of segmental form, so that when they are placed one over the other a space will be left between them, as shewn in the illustration. These blocks are 21 inches in length from front to back, and are arranged upon the bridge at the back of the furnace. The material of which they are composed is a special preparation, the two chief qualities of which are—1st, its being an almost perfect non-conductor of heat; and 2nd, its indestructibility, or nearly so, under incandescent heat, and the alternations of heat to which it is subject when in its place in the furnace. It will be seen that this form gives more surface area than could be obtained from any other arrangement, as both the upper and lower surfaces of the blocks are effectively utilized. The heat from the furnace quickly renders these blocks incandescent, and maintains them so. The fresh coal having been thrown upon the fire dense volumes of black smoke are given off, and this having to pass between the incandescent surfaces of the combustion blocks in thin streams, all the carbon they carry is immediately consumed. Combustion, of course, requires oxygen, and as the atmosphere is the ordinary source of supply, and that admitted through the furnace doors and bars having been used in the combustion that has already taken place, provision is made for introducing more by the curved and perforated plate, at the back of the furnace, and immediately in front of the bridge, as shewn in the illustration. This provides an adequate supply of heated atmospheric air for the combustion of all smoke produced. Instead, therefore, of a dense mass of black smoke being thrown into the atmosphere continuously for several minutes, and extending for long distances over the landscape after stoking, all that is now seen is a thin film of brown smoke, which is given forth for from half a minute to one minute according to conditions. This does not contain one-tenth the carbonaceous matter of the usual heavy volume of black smoke, and can scarcely be seen for more than thirty or forty yards from the top of the chimney. It would not be seen at all were it not in stoking necessary to open the furnace door and admit a large amount of cold air, which momentarily chills the combustion blocks, which then allow a portion of the smoke to escape. Immediately the doors are closed, the blocks begin to regain their heat, and in the time mentioned above, all smoke is again perfectly consumed. The above statements we made on the authority of our own observations at three different establishments where the invention had been applied, and in confirmation of them we have pleasure in appending the following report of a strict test of a scientific character just made by Mr. E. G. Constantine, M.I.M.E., consulting engineer, under the supervision of Mr. E. W. Parnell, the engineer appointed by the Public Committee elected some time ago for testing smoke consuming appliances :—

32, Victoria-street, Manchester,
September 10th, 1890.

To W. Mc G. Greaves, Esq.,
6A, Fountain-street,
Manchester.

SIR,—On the 3rd and 5th of the present month I carried out tests of the No. 2 boiler at Egret Mill, Ashton-under-Lyne, at your request, and beg to report on them as follows :—

Objects of Tests.—To demonstrate to Mr. E. W. Parnell (the engineer appointed by the Committee for testing smoke appliances), the merits of your Patent "Incandescent Smoke Burner" in preventing smoke and economising fuel.

Description of Boiler.—Of the Lancashire type, made by Pritchard, of Oldham, in 1862. Length, 30 feet; diameter, 7 feet; with two internal flue tubes 2 feet 10 inches diameter each in the furnace part, and coned down to 2 feet 4 inches diameter, at 11 feet 6 inches from the front end..

Particulars of Fire Grates.—In the test on 3rd September the grates were 7 feet long by 2 feet 9½ inches wide, of ordinary bars in two lengths. The bars were about 1 inch average thickness, with ⅜ inch wide air spaces between them, and each furnace had the ordinary solid brick bridge.

In the test on 5th September the only alteration made to the furnaces was the application of the Patent Smoke Burner, by which the grates were reduced to 6 feet 3 inches long, instead of 7 feet as in test on September 3rd, the same bars being used, with the same air space.

Particulars of Fire Doors.—The fire doors were furnished with internal plates, and each door had 6½ inch diameter, air holes whi h were left open during each test.

Preparing for Tests.—To obtain the evaporation at the pressure of the atmosphere, the vapour was carried from the boiler by pipes open to the atmosphere into which it was discharged, outside the boiler-house.

Feed Water.—The water used was from the town's main, and was measured into two graduated casks, from whence it was run into the boiler from each cask alternately so as to maintain a constant level in the boiler.

The temperature was taken by suspending a thermometer in the casks, and the water was supplied to the boiler without being heated in any way.

Description of Coal, and Weighing.—The coal was stated to be from Wath Main Colliery, near Barnsley, and that used on each day was said to be from the same seam.

It appeared of a fair quality slack, but there was a greater proportion of small on the 3rd than

on the 5th September, on which (latter) day there were more nuts in the coal. It was weighed in charges of 112lb. on a pair of beam scales, the weights of which had been checked at the Town Hall, Ashton.

Fires and Firing.—The fires were cleaned shortly before the commencement of each test and were not cleaned during the tests. The mode of firing adopted was that known as "spreading," and the fires were kept at a thickness of 8 in. or 9 in., and left in the same condition at the end as at the beginning of the tests.

Ashes.—Only the ashes from the fires during the the tests were taken into account, these being drawn from the ashpits.

Flue Gases.—The temperature of the flues was taken by a Casartelli's Pyrometer, and samples were taken for analysis.

Smoke observations.—The emission of smoke from the chimney was noted during each minute of the tests.

Checking the tests.—Mr. Parnell (who personally superintended the tests) had assistants posted to record the quantity of coal and water supplied to the boiler, the ashes made, all temperatures, sampling flue gases, and emission of smoke from the chimney.

General.—The boiler had been disused for some years, and the main flue was damp. All the internal and external boiler flues had been cleaned previous to the tests, but the boiler had not been cleaned internally.

On the evening of the 3rd inst., by some accident the hose was left running on the top of the left side flue for many hours, and this seriously interfered with the evaporation on the 5th inst.

The results of the tests will be found in the table appended.

Conclusions.—The conclusions to be drawn from the results are :—

(*a.*) That by the application of the "Smoke Burner" the more perfect combustion of the fuel was obtained, as evidenced by the great reduction of the quantity of smoke emitted, and the better evaporation of water obtained per lb. of coal (*vide* table), and also the increased percentage of carbonic acid in the flue gases.

(*b.*) That the accident referred to above, of saturating the left side flue with water during the night of the 3rd inst., very seriously impaired the efficiency of the boiler in the test of 5th inst., as proved by the low temperature of the gases, and the slow evaporation during the first two hours, which was much below the average of the subsequent period of the test.

Note.—So much water had flowed into the flues that the front wall was quite wet, and could be seen drying during the test on 5th inst.—I am, sir, yours faithfully,

E. G. Constantine, M.I.M.E.,
Consulting Engineer.

Tabulated Results of Tests carried out on No. 2 Boiler, Egret Mill, Ashton-under-Lyne, on September 3rd and 5th, 1890, by E. G. Constantine, M.I.M.E., Consulting Engineer.

	Sept. 3rd with Ordinary Furnace.	Sept 5th with Patent Smoke Burner fitted.
Duration of Test - - - - - - - - - Hrs.	4½	4½
Description of Coal - - - - - - - - -	Wath Main Colliery	Wath Main Colliery
State of Weather - - - - - - - - - -	Light Wind, rainy	Light Wind, fine
Temperature of Air in Stokehole - - - - degs. Fah.	62·25	63·75
Do. Feed Water - - - - - do.	54	54
Velocity of Air entering Ashpits - - - Ft. per min.	Right, 865·5 Left, 955·5	Right, 659 Left, 590
Area of Grate Surface - - - - - Square feet	39	34·8
Total Weight of Fuel burnt - - - - - - lbs.	2789	2178
Do. do. Ashes produced - - - - - do.	247	79
Percentage of Ashes produced - - - - -	8·8 per cent.	3·6 per cent.
Total weight of water evaporated - - - - lbs.	19,000	17,100
Weight of Fuel burnt per hour - - - - - do.	619·7	484
Weight of Water evaporated per hour - - - - do.	4222·2	3866·6
Do. do. per lb. of Fuel at 54 deg. - do.	6·81	7·98
Equivalent Weight of Water evaporated per lb. of Fuel at and from 212 deg. - - - - - - do.	7·9	9·28
Weight of Water evaporated per lb. of Combustible at and from 212 deg. - - - - - - do.	8·69	9·71
Weight of Fuel burnt per square foot of fire grate area, per hour - - - - - - - - do.	15·8	13·9
Quantity of Water evaporated per square foot of fire grate area- - - - - - - - cubic feet	1·72	1·77
Smoke.—Emission from Chimney per hour—		
Light - - - - - - - - - mins. secs.	19 0	8 10
Brown - - - - - - - - - do. do.	9 15	1 17
Black - - - - - - - - - do. do.	4 15	0 32
Flue Gases.—Temperature - - - - - degs. Fah.	385	230
Carbonic Acid - - - - - - -	7·1 per cent.	9·9 per cent.
Do. Oxide - - - - - - -	Nil.	Nil.
Oxygen - - - - - - -	2·5 per cent.	9·6 per cent.
Gain in Evaporation lbs. of Water per lb. of Fuel by adopting Smoke Burner - - - - - - - -	17·4 per cent.	
*Gain in Evaporation lbs. of Water per lb. of Combustible - -	11·7 ,,	
Reduction of Smoke by adopting Smoke Burner—		
Light - - - - - - - - - - -	57 ,,	
Brown - - - - - - - - - - -	83 ,,	
Black - - - - - - - - - - -	91 ,,	

* After deducting ashes from coal.

A NEW PROCESS IN THE CALAIS LACE INDUSTRY.

M. Edmond Darchicourt, of Calais, has laboured for some time with the object of improving the processes employed in the staple industry of his town. For four years past he has studied the application of independent fine bars in lace machines, by which the designer is afforded greater scope for a display of his powers, which under present methods are greatly restrained. Those acquainted with lace machinery know that the advantage of this system is that the bars can be used with six to seven gates, or even more if necessary, instead of being confined to two, while all the fine bars work uniformly. Last year M. Darchicourt made experiments on silk goods, and his system enabled him to present, on the same design and without changing the cards, various kinds of *mats*, with grounds that could not be produced previously; these including Handsor or Crèvecœur, and Bishop grounds. These and other grounds depended formerly upon the use of the stump bars. Now, however, all of them can be produced together by the independent warp threads employed in M. Darchicourt's system.

M. Darchicourt has recently applied his new invention of independent bars to Bobinot work. He is thus enabled to give, with the special yarns employed, a greater value to articles produced by this system. Bobinot work has been almost abandoned at Calais owing to the limited scope it offers. This new application becomes increasingly important, as it is hoped it will enable the French to regain a trade which has been almost monopolised by English manufacturers.

Bleaching, Dyeing, Printing, etc.

DYEING BLACK AND FAST DARK COLOURS ON WOOL IN ONE BATH.

Under the names Direct Black, Imperial Black, and Nigrosaline, there are in the market several dye-stuffs that have the property of dyeing wool in one bath black. These substances are sent out in the form of powder, cake, or liquid; and consist essentially of logwood extract, with the requisite metallic salts to form a black. The compounding of each separate product is considered a trade secret, and the results obtained with them are more or less satisfactory. As a rule they contain iron or copper salt, or both, in larger or smaller proportion to the dyewood extract added.

The colour effect with logwood dye-stuffs can be produced with many metallic salts—iron, copper, chromium, tin, alumina. These form lakes of different colours and fastness. They are insoluble in water, but by means of acids or acid salts they can be brought into the state of solution, for which purpose tartaric acid, oxalic acid, tartar, or bisulphate of soda may be used. The acids or other means of dissolving the colour lake which are used with direct dyeing baths should always be first added to the dyebath so as to dissolve the colour lake as it is formed; afterwards the mordant and colour at the same time. The results from tartar are decidedly superior, the black produced being always purer and brighter, but the high price interferes, nevertheless, with its use for the purpose. A cheap substitute is found in oxalic acid, which gives very good results, and by all means is preferable to sulphuric acid. The bath is made boiling, and afterwards for pale or deep colours from 15—20 parts of the dye-stuff of direct black and similar products are added, also 2—5 per cent. of oxalic acid. The amount of acid added depends upon the hardness of the water used, more acid being required if this contains much lime. For soft waters 2 per cent. is sufficient. Much also depends on the condition of the wool to be dyed. If this is freshly washed little acid is wanted, but if it contains alkali, then more acid must be added. The dye-bath is in the best condition when it has a pale brown colour, not an intense yellow or a turbid black colour. The first is due to containing too much acid, which is corrected by adding alkali; the last to the use of too little acid, and a little more must be added. The goods are boiled in this for 1¼ to 1½ hours, and then 1 to 2 per cent. of soda crystals, or, better, 4 to 6 per cent. of ammonia are added. The bath will then have a blue black colour, and the goods are worked 1½ hours longer. With a correct working the black is a fine blue black, as good as can be got with two baths. A jet black can be got with the addition of 1—2 per cent. of fustic extract; and coal-tar colouring matters can be added to shade the black, or form different colours with the logwood.

The fastness of the colours is in most cases sufficient—they are fast to water, to light, and air, also to a light milling.

1.—BLACK ON WOOL.

For 100 lb., the dye-bath is made with :—

DISCOVERY OF COAL NEAR BARROW.—At Bootle, about 14 miles to the north of Barrow, coal has been found between the Whitehaven coalfields and those of Wigan. The sample which has been shewn is of exceedingly good quality, and is a few feet below the surface. The discovery was made upon Mr. Geldart's estate, and is surrounded by land owned by Lord Lonsdale and Lord Muncaster. If adequate coal supplies can be found at Bootle, it would prove of immense commercial value to the trade and port of Barrow-in-Furness, and, as a consequence, great importance is centred in the work of exploration which is now being carried on.

6 lb. dry logwood extract,
½ lb. fustic extract,
2 lb. tartar,
1½ lb. oxalic acid,
4½ lb. copperas,
4 lb. copper sulphate.

nter the goods, boil for 1½ hours therein ; cool, add 6 lb. of ammonia, work for ½ hour longer, wash, and dry.

2.—BLUE BLACK ON WOOL.

For 100 lb. wool, the dye-bath is made with :

4½ lb. logwood extract,
1½ lb. water blue, 3 R.,
2½ lb. oxalic acid,
4½ lb. sulphate of iron,
3½ lb. sulphate of copper.

Proceed as in 1.

3.—NAVY BLUE ON WOOL.

For 100 lb. wool, the dye-bath is made with :

3½ lb. logwood extract,
1½ lb. water blue,
2½ lb. oxalic acid,
4 lb. sulphate of iron,
3½ lb. sulphate of copper.

Proceed as in No. 1.

4.—DARK GREEN ON WOOL.

Prepare the dye-bath with :—

4 lb. logwood extract,
½ lb. fustic extract,
2½ lb. acid green,
1½ oz. naphthol yellow S,
2½ lb. oxalic acid,
4 lb. sulphate of iron,
3½ lb. sulphate of copper.

Proceed as in 1.

5.—DARK BROWN ON WOOL.

The dye-bath is made with :—

4 lb. logwood extract,
2½ lb. orange II.,
½ lb. fast red,
2½ lb. oxalic acid,
4 lb. sulphate of iron,
3½ lb. sulphate of copper.

Proceed as in 1.

6.—DARK BRONZE ON WOOL.

The dye-bath is made with : –

4 lb. logwood extract,
1 lb. orange II.,
2 lb. metanil yellow,
1½ oz. acid green,
2½ lb. oxalic acid,
4 lb. sulphate of iron,
3½ lb. sulphate of copper.

—*Farberei Muster Zeitung.*

DYEING OF CHINA GRASS OR RAMIE.

The *Journal de Teinture* makes the following observations on this subject :—China grass or ramie is almost pure cellulose, for which reason the treatment by the dyer is almost the same as that for dyeing cotton. As the ramie enters often into goods which have to stand frequent washing, the colours must be fast to soap, and the fibre must not in any case lose its brilliancy or its strength. With this object, it is desirable to shorten the dyeing process as much as possible. A good aniline black can be got upon it, but logwood is cheaper. The ramie is first worked in a strong decoction of the wood for an hour and then allowed to drain. A bath is then made containing 5 per cent. of sulphate of copper and 5 per cent. of sulphate of iron. The yarn is passed through this several times, drained and oxidised by exposure to the air ; then the logwood bath is diluted, brought to the boil, ½ per cent. of bichromate of soda added, and the yarn passed through. For light and brilliant shades on ramie it is necessary to use the aniline colours. For basic colours, tannin as free from colour as possible is used ; for light shades 2 to 3 per cent. of tannin is sufficient ; for dark shades 7 to 8 per cent. is required. Work the yarn in the tannin solution for one hour* at 80° F. ; then fix in a solution of tartar emetic containing 1 oz. to the gallon for light shades and 3 oz. to the gallon for dark shades. Passing the ramie through Turkey-red oil before mordanting makes the colours faster and brighter. A light blue is dyed with methylene blue and 5 per cent. of alum, after mordanting with tannin ; enter cold, which avoids inequalities, and raise to the boil. A greenish blue is obtained with Nile blue ; for red shades add methyl violet. A dark blue can be obtained with methylene blue, and a neutral blue with the same colour on a tannin-and-iron mordant. Indigo can be dyed with zinc and hydrosulphite of soda vats. Greens are dyed with brilliant or malachite greens on tannin and antimony mordant. For yellow shades add auramine ; for bluer shades add methylene blue. Olives are got with brilliant green and chrysoidine or Bismarck brown. Dark greens are obtained with brilliant green or malachite green, or with new blue and malachite green on yarn mordanted with sumac and sulphate of iron. Dark olives are dyed like dark greens, except that they are shaded with magenta or chrysoidine. Violets are obtained with the different shades of methyl violet, which permits the dyeing of a variety of shades—from a light heliotrope to a dark prune. Rhodamine gives a magnificent pink upon ramie if care be taken to avoid yellowing during mordanting. The pink is more beautiful if dyed simply with salt and rhodamine, but the lack of fastness is not compensated by the brilliancy of the shade. Deep pink shades are obtained with magenta, ponceau, or mixtures of safranine and rhodamine, which when used in larger proportions furnish a very beautiful bluish red. Shades of yellow and orange are got with thioflavine and auramine for pure yellows, with chrysoidine and auramine for straw colour, and with safranine and auramine for orange. Old gold is dyed with auramine or thioflavine, shaded with chrysoidine or Bismarck brown. For brown, cutch is not to be recommended, as the large proportion of tannin it contains injures the lustre of the fibre, but it is difficult to replace it on account of its fastness. It is only useful in dark shades, and can only be used on yarn which has not been oiled or bleached, if the lustre of the fibre is to be preserved. It is dyed just like cotton, and after chroming may be shaded with magenta or auramine, or be saddened with green copperas before chroming. The benzidine colours are only useful on ramie for light shades, such as pink, cream, straw, ivory, heliotrope, etc. Pinks are obtained with benzopurpurine or diamine red, orange, or ivory ; cream with toluylene orange. In dark shades the benzidine colours give trouble, by staining the whites and other colours in woven fabrics when soaped. This can be avoided by passing the yarns after dyeing through a metallic solution. Alizarine colours give very fast shades upon ramie ; but they are not brilliant, with the exception of alizarine red, which produces a briliant red. It is dyed as on cotton, on an oil-and-alumina mordant. For printing on ramie fabrics, alizarine blue S, cœruleine S, and alizarine black S can be used, mixed with acetate of chrome and thickening and steaming after printing. Instead of the acetate of chrome, a mixture of chrome alum and bisulphite of soda can be used, if the soda sulphate which is formed be first separated. Previous oiling is necessary with the alizarine colours if good results are desired. Grey shades are obtained in various ways :—A light grey can be obtained with nigrisine on tannin, or with a mixture of toluylene orange and benzoazurine in one bath. Various shades of grey can also be got with mixtures of methylene blue and chrysoidine ; malachite green and safranine ; methylene blue, safranine, and auramine.

* This is scarcely long enough ; we should give four to five hours.—ED. *T.M.*

THE Badische Anilin and Soda Fabrik, of Ludwigshafen on the Rhine—probably the largest colour works in Germany—made a profit in 1889 of 5,866,639 marks, or £293,331 English money. A dividend of 20 per cent. was paid, and the large sum of 1,317,320 marks (£65,886) was carried to the sinking, improvement, and other funds.

THERE are not many coal-tar colour works in France. The St. Denis Dye-stuff Company's Works (better known as Poirrier's, at St. Denis), the Lyons branch of Messrs. Casella and Co., of Frankfurt, the Neuville-sur-Saon works of the Badische Anilin and Soda Fabrik, the Flers works of Messrs. Bayer and Co., and a small works of Croix, near Roubaix, complete the list.

BLEACHING BY ELECTRICITY.

Bleaching by electricity is an attractive subject for electricians, many of whom have worked at it with more or less success. There is no doubt that bleaching can be done by electricity, the only thing that prevents it from becoming a commercial success being the fact that it costs more than the usual methods of bleaching. One of the most recent inventors of electrical bleaching processes is Karl Kellner, of Vienna, who has recenty taken out a couple of patents relating to this question. In one of these he takes the material to be bleached, and impregnates it with a solution of a substance which on electrolysis is capable of becoming decomposed, yielding bleaching compounds. The impregnated material is passed through a series of pairs of rollers, which are really the electrolytes of a current of electricity, and as it passes between the rollers an electrical current passes through the material, decomposes the substance with which it has been impregnated, and liberates the bleaching agent, which bleaches the fabric or material.

The other patent is far more complicated. It is well known that when a current of electricity passes through a solution capable of being decomposed, it splits up into two parts, known to electricians as an anion and cathion ; one being most developed round one pole and the other round the other pole of the electrical circle, but the middle point is, however, a neutral zone where no separation takes place. Kellner proposes to electrolyse a solution of an alkaline chloride, and to take steps to separate the anion and cathion from one another, which is a by no means easy thing to do. He then provides means whereby the material to be bleached is alternately treated with these two liquors, which, he states, causes the bleaching to be more effectually performed. After being used the two liquors are again united together to be used over again. There seems to be no great improvement in this over other known processes ; the problem to be solved is not in making the bleaching solution by electricity but in producing the electricity cheap enough.

RED DESIGNS ON INDIGO-BLUE-DYED COTTON.

The favour accorded to cotton cloths presenting a design in red on a navy blue, has encouraged the attention of chemists and colourists to study the means of producing these effects with various colouring matters.

So far as concerns fast colours, the problem has found a solution. The process consists in printing a mordant of alumina with the addition of a discharging medium (which produces white designs on a blue indigo ground), and then dyeing with alizarine. But the easiest method is one that will permit the printing of the red and the discharging agent at the same time. This can be done by the use of vermilion and red lakes with albumen, and the discharge printed on in the same colour.

Mullerius has invented a method of producing red direct on the cloth. The discharge of the indigo is effected by means of ferricyanide of potash in the presence of alkalies when it is transformed into ferrocyanide ; oxygen is at the same time liberated and effects the decolourisation of the indigo.

The benzidin and tolidin colours which dye unmordanted cotton and resist the action of alkalies, afford a means of obtaining discharges of indigo blue with various colours. Mullerius prefers to use silicate of soda instead of caustic soda as giving better results, but the ordinary commercial liquid silicate of soda does not give the best. For benzopurpurine and Congo red to fix in a stable and brilliant condition, it is necessary to use silicate chemically pure, or or least containing no excess of caustic soda, and in the form of a very fine powder. In the presence of alkalies the transformation of the red ferricyanide into the yellow ferrocyanide is produced at the ordinary temperature, whereas the transformation should not be effected until after the impression. The necessity of avoiding the use of the silicate of soda in a state of solution at the time of print-

ing on the fibre is obvious. The proportions employed are :—

Benzopurpurine or Congo red	..	42 parts.
Dextrin	..	210 ,,
Water	..	488 ,,
Ferricyanide of potash ..	..	260 ,,

Boil, allow to cool, then add water to make 1,000 parts. Just before printing, 176 parts of silicate of soda in the form of fine powder are added. The calico is printed, steamed for one hour without pressure, hung in the air, and finally washed with water and soap at 40-50°C. The last can be neglected if some ammonia salts are mixed with the printing colour whereby ammonia is liberated by the excess of caustic soda in the discharging colour.—*Moniteur de la Teinture.*

GAMBINE is a patented dye-stuff of Messrs. Read, Holliday and Sons, which dyes mordanted wool fast shades. Recently the strength of this product has been much increased, so that it may be used in place of alizarine colours for producing many useful shades at a lower cost.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Ashton-under-Lyne.

The Ryecroft Mills Company have issued two calls of 5s. per share. The first is due on the 27th inst., and the second on the 25th of October. The paid-up capital will then amount to £1 per share. The firm is advertising for a manager with a knowledge of fine wefts.

Accrington.

A meeting has been called of the creditors of Mr. Daniel Murray, cotton manufacturer, Commercial Mill.

Atherton.

The directors of the Albion Cotton Spinning Mill, which was partially burnt down last Christmas, have under their consideration a project for building an entirely new mill, fitted with all the latest improvements. A meeting to consider the matter should have been held on Tuesday evening, but owing to the inability to attend of some of the directors, it did not take place.

Bolton.

Mr. Alban Percival has been appointed teacher of Cotton Spinning at the Co-operative Institute, in succession to Robert Cunliffe.

Mr. Samuel Isherwood, junr., a member of the firm of Messrs. G. and J. Slater, Dunscar Bleachworks, has been presented by the employés with a handsome timepiece and a pair of bronze ornaments in view of his approaching marriage.

Mr. Alderman Walmsley, who has long been a prominent figure in Bolton, died on Saturday, at his residence, Great Lever, in his 79th year. Mr. Walmsley in early manhood went to Bolton from Ormskirk, and started business as an ironmonger. Later he entered into partnership with the late Mr. John Harwood in cotton spinning. The partnership ceased in 1871, but previous to that he and his sons had founded the Atlas Forge, which is now a very extensive ironworks. He entered the Town Council as a representave of the Conservative party in 1867, and two years later was elected Mayor, which post he occupied for two years. On retiring from office he still served the town as an alderman, retaining that position until his death. In 1868 he became a justice of the peace for the borough.

Bradford.

Messrs. Leeming and Son, loom makers, Canal-road, have given up business, and their place is to be let or sold. Mr. George Hodgson, machine and loom maker, Thornton-road, has bought all their patterns, etc., and will carry on the business.

Blackburn.

On Monday morning the weavers at Mr. G. W. Nichol's, Canterbury-street mill, struck work, in consequence of alleged excessive "bating."

A receiving order has been made at the Blackburn Bankruptcy Court, on the debtor's own petition, against James Cook, trading as James Cook and Co., cotton manufacturers, of Newby Mill, Rimington. The debtor was also adjudged bankrupt on his own application.

The Blackburn Cotton Operative Spinners' Association have elected Mr. George Ball as their general secretary, in the place of Mr. Thomas Fenton, resigned. Mr. Ball had been assistant for some time, and is a member of the Executive Council of the Amalgamated Association.

At a meeting of weavers at Langho, on Tuesday, a resolution was passed protesting against the conduct af Messrs. Frith and Co., of Spring Mill, for discharging a weaver who went to work late.—Mr. Burrows, of the Northern Counties Weavers' Association, gave an address, and said that the Government should be influenced to procure shorter hours in the cotton mills of India.

At the Blackburn County Police-court, on Wednesday, Messrs. John Whittaker and Philip Holden, manufacturers, Rishton, were summoned by Mr. J. T. Birtwistle, factory inspector, for a breach of the Factory Acts, by allowing three operatives to work overtime on the 21st ult. A fine of 40s. and costs was imposed in one case, and the payment of costs ordered in the others.

Burnley.

The strike of twisters and drawers, at Oxford Mill, was settled on Monday night by the masters conceding the advance asked for, viz., 5½d. to 6d., which is the standard list price.

Yesterday week the weavers employed by Messrs. Altham and Co., Meadows Mill, resumed work, a satisfactory agreement having been arrived at in respect to the dispute about the booking of pieces and the providing of "tally-boards."

Mr. Richard Holdsworth has taken room and power for 400 looms and preparation in Mr. George Keighley's new shed (Woodfield Mill), Trafalgar-street. There is still room and power to let for 600 more.

Last Saturday Mr. M. Watson, auctioneer, &c., left Liverpool on the "Arizona" for a brief visit to the States and Canada, mainly with the desire of improving his health. He is accompanied by his daughter, Miss Watson.

Mr. Richard Sagar, junr., who has been in the employ of Messrs. Stuttard's, at Fence Spinning Mill, has resigned his position as manager, and has been succeeded by Mr. Frank Hartley, of Sabden, who had been previously in the employ of Messrs. Stuttard.

Bury.

The contract for the new engines for the new Peel Mill has been secured by Messrs. John Musgrave and Sons, Limited, of Bolton. The same firm made the engines which drive the present large mill, and it is owing to the excellent results obtained with them that the fresh order has been placed with Messrs. Musgrave.

On Saturday evening an interesting gathering took place at the Conservative Hall, Elton, when the weavers, winders, and warpers employed at the Brooksmouth Cotton Mills, Elton, belonging to Mr. Alderman Peers, met together for the purpose of making a presentation to their late manager, Mr. Napoleon Hopwood. The gifts consisted of a handsome marble timepiece and a silver-mounted pipe in case, of the total value of £5. On the timepiece was the inscription :—"Presented to Mr. Napoleon Hopwood by the weavers, winders and warpers employed at Brooksmouth Mill, Elton, Bury, Sept. 13th, 1899."

Carlisle.

Mr. Samuel Redmayne, of Chatsworth-square, Carlisle, proprietor of the Wigton Clothing Factory, and for five years a member of the Carlisle Town Council, died on Sunday, aged 61.

Clitheroe.

The failure is announced of Messrs. James Coke and Co., cotton manufacturers, Newby Mill.

Cleckheaton.

At a meeting of the council of the Chamber of Commerce, on Wednesday, general regret was expressed at the apparent apathy manifested generally in regard to the question of Imperial federation—it being the opinion of the Council that local organisations should be formed in the various business centres with the object of urging forward the movement. Much attention was devoted to the discussion of the McKinley Tariff Bill.

Colne.

The arrangements for the erection of a new weaving shed at Foulbridge have been so far advanced that the excavation work is now in hand.

Darwen.

The opening meeting of the Technical School was held on Monday night in the William-street Schoolroom, the Mayor (Mr. E. M. Davies) presiding. Messrs. Ald. C. Shorrock, J.P., A. Carus, J.P., Councillors Aspden, Brindle, and Halliwell, J. J. Riley, and H. Hothersall (secretary) were also present. The Mayor said he hoped before very long they would be able to provide for the town premises where technical education could be carried on under much more favourable conditions that was possible in that small, incommodious room.—Mr. Alderman Shorrock said he did not see any reason why the working classes of England should not be as well educated as the men who employed them.—Mr. Carus said technical schools had been, as it were, forced upon England, by the fact that in Germany, France, and in other countries on the Continent they were shooting ahead. Alderman Shorrock had correctly defined technical education when he said that it was a better and a more thorough knowledge of the business they pursued. In textiles, in designing, and many other things the Germans and French were far outstripping us. The technical schools would put us abreast. The school was yet in its infancy, but it was gratifying to know that, although their passes at the examinations were a long way off being as high as they should be, yet they were in front of Blackburn in manufacturing and designing.

Glossop.

Messrs. Woods, manufacturers, of this town, have just decided to renew their looms, and have this week given an order for 1,200 new ones, to include all recent improvements, to Mr. Geo. Keighley, Barnley. We are pleased to see that, though all the old proprietors of this high class firm have gone over to the majority, those who have stepped into their places have inherited a good share of their enterprise, and that the prosperity of Glossop is not likely to suffer in their hands.

Hebden Bridge.

We hear that Messrs. J. Crowther and Co., Hangingroyd Works, intend filling with looms the shed now partly occupied by Ashworth Bros.

Heywood.

The whole of the order for card clothing for the Yew Spinning Company, Heywood, has been placed with Messrs. Wilson and Ingham, Liversedge, the well-known makers of needle point cards.

Hyde.

The Apethorne Mill Co., Limited, have just awarded the order for furnishing their mill to Messrs. John Hetherington and Sons, Manchester. When complete it will contain 60,000 spindles and preparation.

Kirkham.

Disturbances occurred among the weavers at Messrs. Walker, Moss, and Co.'s, Wesham, on Monday morning. A weaver stopped off, and another woman was sent for take her place. The substitute arrived about a quarter to eight a.m., but after breakfast all the other weavers knocked off their looms because of this one being taken on, as they say there are plenty of two-loom weavers ready for four looms, and tenters ready for two looms. The engines were kept running until dinner time, but none of the weavers were working. As the substitute did not turn up after dinner the hands resumed work until about 3.30, when another outsider was brought in. Immediately the looms were knocked off again, and nothing more was done during the afternoon. We understand the firm will not overlook the affair.

Leigh.

A number of new looms are being placed in the Leigh Co-operative Weaving Shed, in place of some old ones.

The sprinklers in Mr. Wm. Guest's mill are now completed. A large tower has been erected, to give more force of water for the sprinklers.

The question is now being raised by the spinners in the Leigh district as to being paid by indicator instead of the present way.

Manchester.

Our readers will remember we recently announced the transformation of the firm of Messrs. John Hetherington and Sons, engineers and machinists, into a joint stock company, limited. The amount of capital allotted for disposition amongst the outside public, we are informed, has been subscribed three times over.

We regret to announce the death of Mr. Robert Whitaker Munn, of the firm of John Munn and Co., yarn and cloth agents and commission merchants, in this city, who died on Tuesday evening, after a short illness, at his residence, Heath Hill, Stacksteads. The deceased gentleman, who was 46 years of age, was on the commission of the peace, and was well known both in Manchester and in Rossendale. In politics he was a Conservative. The funeral takes place to-day at the Parish Church, Newchurch.

At a largely attended meeting of the members of the Union of Engravers to Calico Printers, held in

Manchester on Saturday night, it was unanimously resolved to continue the agitation for time and a quarter payment for overtime. Votes of thanks were passed to those firms who have already granted the concession, and to the employers who have agreed not to ask the employés to work overtime. Mr. Stirling Ewing, president of the Union, occupied the chair.

The volume of trade between this city and the United States has recently been quite phenomenal. The first rush of shipments occurred between the end of June and the middle of July, the cause of the activity being the Customs Administration Bill. This measure was calculated to place a serious check upon the importation of cotton goods and hosiery, and naturally those concerned were anxious to get their goods into the United States before it came into operation. In August the McKinley Bill was the occasion of a further rush, which has latterly grown rather than shrunk. There is an impression in many places that the bill will come into force on the 1st of October, but there appears to be very little ground for this supposition. In the first place the bill will not become law until the Conference Committee have been called together, and have adjusted the difference between the two Houses upon 464 articles. This can hardly be completed before the first of October, and then, if precedent be followed, there will be an interval of two or three months before the bill takes effect. The present rush, therefore, would appear to be a little premature. Its effect upon freights from Liverpool may be judged by the fact that instead of paying 7s. to 10s. or say 12s. 6d. per ton, which are the ordinary rates, shippers have recently paid such extravagant prices as 30s. to 40s. It is even said that cases have occurred in which £5 per ton has been paid for shipments from Liverpool to New York. Besides the freight, some in their anxiety have paid heavy railway charges, the scarcity of tonnage for New York having led some of the merchants of this district shipping goods to Boston, with instructions that they should be sent overland to New York.

Newchurch.

The Albert Works, Wentewell Bottom, belonging to Messrs. Mitchell Bros., manufacturers, have this year been considerably enlarged, and a new wing is now completed, and is being fitted up with machinery.

Oldham.

Messrs. S. Shaw and J. C. Atkins, of Oldham, have applied for patents for a strap lifter and a regulating lever.

The extensions in connection with the Ivy Mill Company are being pushed on with, and have now about reached half their height.

It is reported that the carder at the Clough Mills, Shaw, has been engaged as the manager for the new Neville-street Mill Company.

Messrs. Sykes Bros., cardmakers, have obtained the order for the whole of the cards for the Eagle Mill Company.

Mr. Rostern, formerly of the United Spinning Company, has been engaged as manager at the Bentfield Spinning Company.

Mr. William Henshaw, who was up to recently engaged at the Neville-street Mill, has received the appointment of carder at the Ruby Mill Company.

Mr. James Taylor, of Glenley Mill, has been appointed to the vacant engineership at the Oldham Twist Company.

The Woodstock Mill Company's directors have resolved to place in four new steel boilers, the order having been given to the Oldham Boiler Works Company.

Mr. Thomas Cottam has resigned his position of manager of the Glodwick Spinning Company, he having accepted a similar position at the Stamford Mill Company, Lees, where he commences his duties on the 23rd ult.

The repairs to the engines of the Broadway Spinning Company, which are being carried out by Messrs. Urmson and Thompson, of Oldham, are expected to be completed to allow of the resumption of spinning operations on Monday.

Mr. Joseph Lees, of the Oldham Twist Company, has engaged himself as engineer at the Richmond Mill, belonging to Messrs. Murgatroyd and Stansfield. Machinery is being placed in the mill, which is expected shortly to be at work.

Machinery is as quickly as possible being set to work in the new mill of the Ruby Spinning Company. This week some of the machinery commenced running, and in the course of a few weeks matters will be begun in earnest.

The Middleton and Tonge Spinning Company is renewing its machinery, and Messrs. Hetherington and Sons, Manchester, have received the favour of the directors. From the trials made with this firm's machinery, it is stated as being highly probable that the whole of the renewals will be placed in the hands of Messrs. Hetherington.

We understand that several spinning firms in this district are contemplating fitting up their fireproof mills with automatic sprinklers. Already a few mills of this type have been protected in this manner. Everything possible seems now to be done to reduce the risk of loss by fire, and to lessen the possibility of total destruction.

Messrs. Emanuel Whittaker and Company, of Oldham, have obtained the contract of the new offices required by the Royal Mill Company. With the new mill which is about to be erected, in addition to present premises, this company will own about 90,000 spindles. Mr. F. W. Dixon, of Oldham, is preparing the plans for the new mill, the contracts for which are not yet given out.

A case of breaking a good record came before the Oldham magistrates on Saturday, by which Messrs. J. and S. Taylor, Limited, were summoned for a breach of the Factory Act by working the mill during the meal hour. Mr. R. Ascroft, who defended, said the firm had a fifty years' record, and had never been summoned previously. Mr. Vaughan (the Factory Inspector), in reply, stated that up to recently—when it was converted into a "limited"—the mill had borne a good character. Mr. Booth (the magistrates' clerk) remarked that the Company had now got no conscience. A fine of 5s. and costs in each of the ten cases was imposed.

The attention of the local police courts, this week, has been directed to the hearing of charges against mill-owners, for committing nuisances by the emission of black smoke. In each instance, orders for abatement of the nuisance have been made, but the magistrates declined to define what means should be taken, or appliances used, to bring about this state of things. For some time now at a number of mills in the town, experiments have been going forward, and it is reported that several patents applied have been found to thoroughly answer the requirements. At the same time it must be stated that there is a great diversity of opinion as to the reliability of these appliances, and it is contended that the Corporation should experiment with the view of doing away with dense smoke, inasmuch as mill-owners have expended large sums in the past in this direction. What employers require is a cheap, easy, ready, and safe means of overcoming the difficulty.

We have previously intimated that arrangements were being made to take over the Neville-street Mill, formerly owned by the Abbey Mill Company, and now in the possession and occupation of Mr. Hilton Greaves. The prospectuses have been issued this week, and state that the capital is £70,000, and the mill, etc., will be sold to the present owners for £19,700. The promoters are Messrs. James Smith, manager Summervale Mill Company; John Bunting, sharebroker; Joseph Mills, manager Osborne Mills Company; James Halliwell, cotton spinner, Shaw; John Taylor, engineer, Shaw; Robert Harrison, chairman United Spinning Company; and Mr. Thomas Holden, salesman, Greenacres Spinning Company. It is intended to take out the present machinery and replace it with Messrs. Platt's makes, and also undertake other alterations, so as to place the concern in good working order. The mill, we might state, is fireproof. The qualification of a director is 100 shares of £5 each. The prospectus also states that about £18,700 of mortgage has been promised, at 4 per cent. interest, and an arrangement has been also entered into for fitting the mill with Grinnell sprinklers.

The monthly meeting of the Oldham Chamber of Commerce was held in the Oldham Town Hall, Mr. A. Emmott presiding. A letter was read from Mr. J. M. Maclean, M.P., respecting the expiring commercial treaties. He stated that he had made representations to the President of the Board of Trade as to the desirability of having a special representative of the cotton-spinning and manufacturing industry placed on the committee, but Sir M. Hicks-Beach steadfastly refused to increase the number of the Committee. He thought under the circumstances all he could do was to mention the matter to Mr. Mundella, the chairman of the Committee, who assured him that he would take care that the interests of the trade of Oldham were not neglected, and that he would put himself in communication with the representatives of the trade whenever anything affecting it came up for discussion. The Council thought Mr. Maclean had done all he could, and the result was satisfactory. A communication was also received from the Blackburn and District Chamber of Commerce respecting Indian factory legislation, which stated that that Chamber considered the judgment of the Government of India had been warped by the clamour raised by Indian millowners, who desired an unfair field for competition with England, and it could not too strongly express the opinion that in the matter of Factory Acts there should not be one law for England and another for India, but that the Indian operatives should receive in full the same protection which was granted to their fellow-operatives in England.

Ossett.

Much regret is felt in Ossett at the news of the death of Mr. Andrew Pickard, of Green Mount, which took place at Llandudno, on Thursday. Mr. Pickard, who was a native of Ossett, had carried on for many years the business of a cloth merchant at Leeds. On the death of his brother, Mr. David Pickard, of Ossett, he succeeded to a woollen manufactory at Horbury Bridge, just outside the borough, and continued that business also.

The winter session of the Ossett Technical School will open next Monday week, but the formal opening ceremony will probably be delayed until November, by which time, it is hoped, the remainder of the funds required to defray the cost of its erection will be forthcoming. A special movement, with that object in view, was inaugurated on the receipt of a charter of incorporation for the town.

Padiham.

We understand that Mr. Ethelred Helm of this town, has accepted an engagement for three years as manager with the Hyderabad Cotton Spinning and Weaving Company, Hyderabad. He will depart to take up his engagement early in November.

Mr. Richard Thompson, J.P., of Alma and Britannia Mills, has been appointed president of the Science, Art, and Technical Classes, and Mr. George Green, junior, has been appointed secretary in place of Mr. Thomas Pate, resigned. The cotton class in connection with the above will the coming session be in charge of Mr. J. Holmes, of Burnley.

Rochdale.

Mr. Abraham Tattersall, the successful manager of the Millgate and Facit Manufacturing Company, has resigned, having been appointed manager of Farholme Mill, of the new Bacup and Wardle Company, and Mr. George Taylor, the Farholme manager, has transferred his services to Messrs. Stuttard's, Underbank Mill, Whitworth.

Shaw.

Mr. Goodwin, carder at Mr. J. M. Cheetham's, Clough Mill, has been appointed manager at the Abbey Mill Company, Oldham, which is at present being floated by Mr. John Bunting.

Shipley.

The first lecture of the session in connection with the Shipley Technical Schools was given in the school premises on Wednesday evening, by Mr. A. F. Barker, instructor in weaving and designing, on "The science of cloth construction."

Stalybridge.

Messrs. Cheetham, cotton spinners, of this town, have just given an order for new cards to Messrs. John Hetherington and Sons, Manchester.

Tyldesley.

Messrs. Caleb Wright and Co., of this town, have commenced building their No. 8 spinning mill. Threlfalls, of Bolton, have secured the order for all the mules for same.

Yeadon.

A meeting of the Yeadon and Guiseley Chamber of Commerce was held at the Yeadon Town Hall on Monday evening, Mr. Jonathan Peate (chairman) presiding. Mr. E. E. Slater suggested that a telephone exchange should be established at the Town Hall, so that different manufactories might be connected therewith, and then intimation of fires could be quickly given, and any mills having fire engines could be communicated with readily. After some discussion, which was all in favour of the scheme, Mr. Slater and Mr. Coupland were appointed to make inquiries as to the cost of putting into practice the proposal. The Chairman announced that, although the Chamber had considered that they had done all they could with regard to the proposed Yeadon, Guiseley, and Rawdon Railway, it had been resolved to make a further effort, and Messrs. Barraclough, Slater, and Denison were deputed to wait upon several other people to see if the required sum could be raised so that the work might proceed. Mr. S. Barraclough reported that there remained about £800 or £1,000 more to be subscribed before the requisite £3,400 would be reached. It was determined to allow the subject to remain open a while longer to see if the amount can be raised.

SCOTLAND.

Dundee.

On Saturday the members of the Dundee Mechanical Society, to the number of 40, visited Blebo Flax Works, Dura Den, belonging to Messrs. Alexander Watson and Son. This was the last excursion of the present session. Crossing to Newport by the three o'clock boat, the party were conveyed by brakes and bicycles to Dura Den, where they were received by Mr. Ness and Miss Watson, daughter of Mr. John Watson, the present proprietor of the works, and accorded a hearty welcome. The large high breast water-wheel was first inspected. It is 40¼ feet in diameter, breadth of bucket 8 feet, giving an effective horse-power of about 60 per cent. It makes 3½ revolutions per minute, and gives a driving speed to the spinning shaft of 180 revolutions. The load of water on the wheel at one time is between seven and eight tons. The water having been turned on for a few minutes, the ponderous machine was watched with great interest. A small steam engine can also be used along with the water-wheel, the speed of which is indicated on a dial in the spinning-room, so that a due load of water can be applied to the water-wheel to run it in exact harmony with the engine. The flax-preparing and spinning flats were also examined. The flax line spun here ranges from 2 lb. to 3½ lb. per spindle. The party then adjourned to the tow-spinning mill, a short distance up the Den, near Pitscottie. This mill is driven by a turbine wheel. A vote of thanks was accorded to Miss Watson and Mr. Ness, after which the party returned home.

Govan.

On Tuesday, a woman was sentenced to 30 days' imprisonment for stealing 38 pieces of skirting, 30 pieces of silk, and a quantity of cloth from the Govan Weaving Factory.

Inverness.

The annual exhibition of Highland Home Industries was opened on Monday with the judging of the various exhibits. In all some 1,600 individual exhibits have been sent in from the different counties—Sutherlandshire alone contributing over 900 articles. The Association, of which the Marchioness of Stafford is president, offers prizes for spinning, weaving, knitting, sewing, and for carving, and in all these departments the competition this year has been most keen, and the work shewn remarkably good. In the spinning and weaving department a great improvement, as compared with former exhibitions, is observable both in the make and pattern of the goods. In this department the bulk of the prizes go to Sutherlandshire.

Paisley.

The fund for the erection of a bronze statue to the memory of the late Sir Peter Coats, of Auchendrane, now amounts to £2,136 19*s.* 6d.

The attractions of the museum have lately been considerably enhanced by the addition of various important contributions, among which may be mentioned specimens of ancient embroidery of Spanish and Venetian manufacture.

IRELAND.

Belfast.

Extraordinary activity prevails in the Belfast linen trade in view of the adoption of the provisions of the McKinley Tariff Bill. Merchants are straining every effort to place as much material as possible in the American markets on the old terms, and the "Majestic" which sailed from the Mersey on Wednesday, took one of the largest cargoes of linen fabrics—chiefly from Belfast—that ever left Ireland. Many shippers have been disappointed at not finding sufficient accommodation for their goods.

A trial of a new scutching machine, patented by Mr. Joseph B. Black, of Ballymena, was recently made in the presence of several gentlemen interested in the preparation and manufacture of flax, and is favourably reported on. The yield of dressed fibre is said to exceed that from the ordinary scutching bundle by 30 to 50 per cent., producing a better fibre, as the reeds are kept whole, and not split or broken. The dressed fibre has much the appearance of what is known in the local markets as "hand scutched," from its being dressed by hand.

Dublin.

The females employed at the weaving factory of Messrs. Pim Brothers, Greenmount, who struck work a few days ago for increased wages, have come to an arrangement with their employers, by which the wages of all deserving employés will be increased.

Lisburn.

The death is announced of Mr. John Sinton, proprietor of the Ravarnette Weaving Factory. He was a warm friend of his numerous employés, and was greatly respected.

Miscellaneous.

MR. SWIRE SMITH ON THE McKINLEY TARIFF BILL.

Mr. Swire Smith (who was a member of the Royal Commission on Technical Education) distributed the prizes of the Leek School of Art, on Thursday evening, and delivered a speech, in which he dealt with the probable effects of the McKinley Tariff Bill on British commerce. He said it was a remarkable fact that in spite of all the efforts of other countries to kill our trade by their high protective duties, their long hours, low wages, and bounties, and even in spite of their improved education, we held our own, still taking the lead. And so we should continue to do if only we looked to the efficiency of our men as well as of our machines. At the present time all Europe was in alarm about the McKinley Tariff Bill of America. He was afraid that the Bill would cause more suffering in England than some of us dreamed of, for it would dislocate many important industries, and until new outlets could be found it would probably cause the stoppage of much machinery and entail great loss on many employers and their workpeople. The object of the Bill was in effect to shut out British and other manufactures from the States by doubling their cost. But the expected would not necessarily happen. In illustration of this he would give them an interesting page of history. America had been protecting its manufacturers for a hundred years, and prior to the rebellion they prospered steadily under a 20 per cent. duty. But after the war, money was wanted for the payment of the debt, and the duties were raised to about 60 per cent. on silk goods, such as those of Leek, and to 50 to 55 per cent. on cotton and worsted goods. With such protection many American manufacturers prospered "like the green bay tree," and they liked it so well that they had never ceased to agitate for more of it. English manufacturers of all kinds, especially the makers of cheap staple products that could be easily imitated, lost their American trade and suffered in proportion, but the unskilled workers in this country were hardest hit, while the increased protection gave no particular stimulus to higher efficiency in America. Manufacturers were everywhere much the same, they seldom made new patterns so long as the old ones would sell. The present tariff, he was told, practically shut out Leek silk goods, and it played havoc with the worsted goods of Bradford. In 1872 Bradford exported to the United States goods, etc., to the value of £3,700,000. In 1878 the Bradford exports fell off to £1,000,000, and some other districts went through a similar experience. The years of 1878-9-80 were distressing years throughout England, and the American Consul reported from Bradford to his Government that American enterprise would henceforth supply its own needs, and the exports from Bradford would soon cease.

But in its days of adversity Bradford began to consider. Heroic remedies, such as retaliation, &c., of which we should hear a good deal again, were advocated, but all classes combined — operative spinners and weavers, machine makers, employers, dyers, merchants, and the general public—to bring the local industries within the range of popular favour, and, as bearing upon the present meeting, the Bradford Technical College was built, at a cost of £40,000, and organised as an institution for the development of the artistic, chemical, scientific, and technical knowledge of the young men of Bradford. By a combination of agencies, all tending to greater efficiency, in which improved technical instruction was perhaps the most important, Bradford produced novelties and designs which attracted the public; they found favour in America, and were bought in spite of the high duties, and gradually the trade with that country, which was in a dying condition in 1878, rose from £1,000,000 in that year to over £4,000,000 last year.

The last American tariff taught English manufacturers a lesson which in this second time of trial they would not forget—namely, that when changes came they must be on the alert to meet them,—and although much remained to be done, yet the industrial equipment of our people was much better as compared with our rivals than it had ever been before. He had come to the conclusion, after recently visiting the leading factories of America, that, although we must never again expect to send large shipments of common staple goods, still in superior fabrics protection in that country is only protective when the domestic goods are as attractive as the imported goods. American ladies were surpassed by none in taste and judgment of quality, and they could not be tempted by cheapness to buy home-made fabrics if the foreign, even at a much higher price, pleased them better. There had, of course, been an enormous improvement in American manufactures, but he had been repeatedly told in the leading stores in different parts of the country that the buyers could rely on the imported goods, but not on their own. The Americans had imported from England in 1860, under a 20 per cent. duty, commodities valued at £33,000,000. In 1888, under a 50 per cent. duty, the imports from England amounted to £71,000,000. From Germany the imports amounted to £2,500,000 in 1860, against £11,000,000 in 1888. Thus, under a tariff that was intended to shut out foreign goods, the imports from England had doubled, while those from Germany had more than quadrupled. Nor must they suppose that those imports represented what the Americans were never tired of calling "pauper labour." Her imports in these days were the best and most costly of European goods, and represented the labour which in payment most nearly approximated to her own. A large proportion of the goods now entering the United States under a 50 per cent. duty were novelties and high-class products such as were not made in America, and until they were made there many of these goods would still be admitted even though the duties were raised to 100 per cent. The Americans would not put forth their energies to make superior goods if they found that under the tariff they could make good profits on common goods. Therefore the ever-increasing demand for quality, style, novelty, and beauty would come to England, if only we would so educate our people that we could supply it.

America furnished the best example that he knew of the futility of protection to protect, the moment that the supply of protected goods overtook the home demand. America at the present moment looked in vain for a profitable outlet for its overplus of textiles, particularly cotton goods, and large quantities were frequently shipped to England to be sold at any price they would fetch. Yet no country was more favoured than America for taking the lead in the cotton trade. Their machinery was now mostly made in the States from English models. They had unsurpassed water and steam power, their cotton grew at home, in fact, in the South he had seen it growing within sight of the factory. They were favoured also by the highest import duties in the world, while their operatives worked longer hours than the English; and not only this, but their experts claimed that although in the aggregate their wages were higher because they worked harder, yet they minded more looms at a lower rate of pay by piece than those of Lancashire. Yet with all these advantages they were unable to compete with Lancashire even in their own markets in the making of the high-class goods that their people bought. They were importing cotton goods of the value of about £6,000,000 a year, and only a month ago arrangements were reported for temporarily "shutting down" 50 cotton mills containing 3,000,000 spindles (one-fifth of the total) and 60,000 looms. What strange irony that English mills should get nearly the whole of their cotton from the United States, pay carriage both ways, work shorter hours and pay as good wages, keep their mills going all the year round at full pay, exposed to the open competition of the world, and send back their best goods to America under fire of a 50 per cent. duty, while the protected mills of America had to shut down periodically because they make more goods than they could sell at a profit! To what remedy did these and other manufacturers look for bettering their condition? Not to increased energy, skill, and efficiency on their part, but to more protection—to the salvation of the McKinley Bill.

We must meet protection by increased efficiency, and we must begin in our schools. Our battle was not so much with America as with the highly skilled and tastefully educated French and Germans, whose technical schools we were paying for by buying their products, and whose education we should continue to pay for till we gave as useful and as appropriate an education to our own people. The McKinley Bill would not shut out all our manufactures, but it ought effectually to shut all American manufactures in. Under such a system of protection the Americans, who were destined some day to become the greatest manufacturing nation on earth, would not be serious competitors in the world's markets. The population of the United states was said to be 70,000,000, but the population of the world was estimated at 1,400,000,000, or 20 times as many, of whom it was said that no more than one-third had yet been reached by machine-made fabrics. Let them con-

sider the rapidity of development that was going on all over the world, the extension of railways and other means of communication, the march of civilisation in the old-world countries, the new wants and cravings for comfort that everywhere had to be satisfied, and they would realise that never in the world's history had there been a greater demand for the products of labour, and that those who were most painstaking and assiduous in developing the physical and intellectual faculties with which they were endowed, would merit and receive the best rewards that the world had to offer.

MR. J. R. BARLOW ON TEXTILE QUESTIONS.

The third address of a series by which the season at the Manchester Technical School is being inaugurated was delivered on Wednesday night, in the lecture hall of the institution, by Mr. J. R. Barlow, B.A., J.P. (Messrs. Barlow & Jones, Ld.), of Bolton, who dealt with Textile Questions. The chair was taken by Mr. F. Godlee, who was accompanied by Messrs. H. Renold, F. G. Lomas, and J. W. Fox. There was a full attendance. The Chairman, in introducing the lecturer, said they had a very complete school in connection with the textile department of the Technical School, at Peter-street, which was always open. He regarded that as the principal school connected with the spinning and weaving trades in the country. They had had during the past season 170 evening students, and 35 attended the day classes.

Mr. Barlow, after referring to the interest he, as a Lancashire man, felt in the success of these schools, said that the last fifty years had seen a complete revolution in English trade and industry in the growth and extraordinary development of the factory system. Many earnest men deplored this, with its excessive subdivision of labour and specialisation of industries, as a calamity. They looked back to hand-loom weaving and the hand spinning carried on in the home as to a lost Utopia, and in their judgment our present industrial system, with its division of labour, its competition, its large factories, and overgrown towns, was an unmixed evil. Mr. Albert Fleming, an enthusiastic disciple of Mr. Ruskin, had with great difficulty been trying to resuscitate the old industry of flax spinning and weaving by hand in the Langdale valleys, and had found occupation for a few old women, the productions of whose industry find a sale at a very high price. He had no intention of sneering at this very interesting and charming experiment, but the fingers of the clock could not be thus put back, and any such industry could only result in the production at a prohibitive price of an article of luxury for the well-to-do.

As regarded the actual and intrinsic merit of the articles we produced, apart from their price, we had nothing to boast of. We had in our own museum specimens of weaving executed in many cases hundreds of years ago which embody principles and results which we could only imitate to-day by our most ingenious inventions. Mr. Flinders Petrie, in his explorations in that Græco-Roman cemetery about 50 miles south of Cairo, had unearthed some most wonderful specimens of similar fabrics. These explorations were largely carried out at the cost of Mr. Jesse Haworth, who had in the most generous and public-spirited way devoted his share of the spoil to the service of the public. Amongst these fabrics would be found cloth made with the raised pile or terry, which we now weave in our looms and call Turkish towels, the pile, however, being made from the weft, like the old-fashioned Bolton caddow counterpanes. This seemed to have been woven by the Greeks as a sort of imitation of an animal's skin.

If they estimated the conditions under which the old hand-loom industry was carried on in Lancashire they would find that a loom-shop was part of the homestead of the little moorland farm. The different members of the family toiled early and late at their weaving, and in the slack time, when weaving was bad, there was the work of the farm to do. The earnings were very meagre. Very rarely was any animal food tasted, the staple diet being oatmeal, in the forms of porridge and oatcake, eaten with buttermilk or treacle and water. In the memory of some of his own village neighbours black treacle was 4d. a pound, and sugar 8d. Tea and a very coarse wheat bread were special luxuries for occasional Sundays. The old times of hand spinning before the invention of the mule gave a great premium to the employment of children of very tender age, and the abuses connected with it were probably as great as those associated with the early days of factory labour before the era of the Factory Acts. But it appeared to be clearly established by experience that as soon as a trade became highly organised by division of labour, and capital was largely invested in expensive buildings and machinery, the condition of the workers was greatly improved. The factory or work-shop came under the inspection of the Government Inspector, was subject to rigorous conditions as to hours of labour, ventilation, holidays, safety of the machinery, &c. The association of a number of workpeople at the same occupations led to their being able to form combinations for watching their own interests.

After dealing with the process of weaving and spinning in Eastern countries in primitive times, Mr. Barlow proceeded to say that 130 years ago our processes of manufacture were about as simple as those of India. The spinning was, after carding with hand cards, done upon the hand wheel, first of all a coarse roving being spun, and then the rovings drawn out finer. The great inventions of spinning by rollers, for which Arkwright got the credit, spinning by the carriage, the jenny of Hargreaves, the mule of Crompton, combining characteristics of both, the carding engine of Arkwright, followed one another in quick succession during the last thirty years of the last century. The stimulating influence which produced this series of inventions appeared to have been the difficulty in supplying sufficient yarn for the weavers. Every weaver could consume as much yarn as six or eight spinners could produce. Meanwhile the hand-loom had been improved by the invention of the fly shuttle by Kay. Up to this time the shuttle was thrown across the web from side to side by the hand. One hand despatched it from the one side, while the other received it at the opposite side, and returned it in like manner. Kay lengthened the lathe or slay in order to make boxes for the shuttle to rest in, and by means of two cords connected with pickers in each shuttle-box, and with a peg in the weaver's hand, enabled him by a jerky motion to pick the shuttle across from each side alternately. This made the hand-loom much more productive, and aggravated the difficulty of the already short supply of yarn. It was interesting to note that the silk weavers of Lyons had not, to any extent, adopted the fly-shuttle principle.

There was no doubt that the future of our great Lancashire industry would be largely moulded by the influence of the technical students of to-day. After making every allowance for the acknowledged superior efficiency of English labour, they must remember that wide-awake competitors abroad were adopting year by year the most modern machinery our workshops could produce. In addition to this, in every competing country the hours of labour were longer and the wages lower than ours, and in certain branches of the weaving trade abroad the production per hour was now equal to that in the best English mills. For nearly a generation in Germany education, both general and technical, had been pushed forward by the Government with unwearied zeal and at enormous cost, whilst we had been spending our energy upon squabbles about questions of Board Schools and denominational schools, and were only just awakening to the importance of technical education. We could rightly congratulate ourselves upon the generous help that had been so wisely given to this school by the Whitworth trustees, and could hope that in some way or other science, art, and technical education in Manchester might be organised on a thoroughly sound and liberal basis. If, however, we measured ourselves against the educational equipment of such decidedly inferior towns as Crefeld, Chemnitz, or Zurich, we must feel that we have still much leeway to make up. Year by year our markets were becoming more circumscribed in some directions. In India we had quite a different kind of competition from that of Europe. Year by year the jealousy of our neighbours increased their protective tariffs. The last and most startling has been the passing of the McKinley Bill, which advanced still higher the already all but prohibitive duties upon Lancashire goods seeking admission into the United States. Concluding, Mr. Barlow said, however, that there were evidences, in such different directions as the Ship Canal, the Forth Bridge, and the great commercial chartered companies which were exploiting Africa, that our national vigour renews its youth. The history of the world had shewn that commercial as well as other supremacy has mysterious ebbs and flows. Such schools as this could do much in the way of acting the part of "training walls," or of great dredging machines, and help in retaining the stream in its ancient channels. (Cheers.)

At the close of the address a hearty vote of thanks to Mr. Barlow was passed, on the motion of Mr. T. G. Lomas, seconded by Mr. J. Simpson, and a similar vote was accorded the chairman.

The Brunswick Jute and Flax Company, Limited, has made a gross profit of £14,246, against £30,568 for last year. After all deductions, a dividend of 6 per cent. will be paid, as compared with 11 per cent. for 1889.

SISAL FIBRE IN THE BAHAMAS.

The Bahamas are a group of coral islets at the entrance to the Gulf of Mexico, belonging to Great Britain. They are not as productive as many other of the West India Islands, but yield pine apples, oranges, tomatoes, and other tropical productions, whilst the seas around produce sponges in considerable abundance. The forests, which cover a considerable portion of their area, contain hard, dye, and fancy furniture woods. Cotton and all fibrous plants flourish well, and it is their capacity in this respect we are pleased to observe is about to be more extensively utilised than ever before. The cultivation of the *Agave sisilana*—familiarly known as Sisal, or grass hemp; in Mexico as Sosquil; in Central America as Cabuya; and in Yucatan, as Henequen—has just been introduced, and promises excellent results, if we may place reliance upon a recent report of the United States Consul at Nassau. In the report written to his Government on the recent development of sisal cultivation in the islands, he describes it as marvellous. A little over a year ago there was very little capital, local or foreign, invested in the business in the colony, "while to-day parties from Great Britain, Canada, and Newfoundland, representing large resources, are interested in sisal, have bought tens of thousands of acres of Government land, and are industriously engaged in clearing and planting the same to the full measure of their ability to procure the material. It is estimated that about 6,000 acres of land have already been planted in sisal (a plantation once planted needs no replanting for many years), and that many additional ones have been cleared and made ready for the plants, the obtaining of which has been almost impossible, the industry being seriously retarded thereby. The prices paid for plants have risen from 6c. per dozen to 36c., so great has been the demand; but the price will now decline rapidly, since the supply of plants is developing enormously, about 2,000,000 being now available for planting, and others coming on speedily. The pita plant is being found in all the islands growing wild, and the stock of old plants is very great. From the centre of the old plant rises a pole about 16 ft. in length, on the branches of which small plants grow, averaging a thousand to each pole, and from these poles a large supply is coming into market, creating a profitable business, for what were two years ago only noxious weeds have all at once become worth 20 dols. apiece for pole plants alone." The Consul regards the unexampled success of the sisal industry in so brief a period as due to the manner in which it has been managed by Sir Ambrose Shea, who has all along taken a most earnest interest in the matter. From the start he realised that this industry would be the salvation of the Bahamas, and, setting his heart upon it, he pushed it forward with great energy and prudence, overcoming numerous difficulties, surmounting obstacles, encourgaing the faint-hearted, until now the people are touched with his own enthusiasm, and the industry is fairly afloat. He visited England, and by personal effort enlisted capitalists and procured large investments. To Sir Ambrose Shea the colonists owe a large debt of gratitude; and when the signal prosperity, which is already hanging over the island, shall have been developed to its full measure they will more perfectly realise how not only their individual interests, but those of outside investors, have been wisely and prudently promoted and guarded from the very inception of the industry by the practical, discreet, and conservative action of their Governor. "There can be no no doubt or question as to the success of sisal culture in this colony. It has passed far beyond the experimental stage, and is giving daily evidence that it will become a source of wealth to all concerned. The combined conditions of soil and climate especially adapted to the growth of first-class fibre give this colony a marked advantage over other West Indian islands, where the plant may grow luxuriantly enough, but will be found deficient in good strong fibre. The poorer and more sterile the soil the better the result, and here the plant flourishes where ordinary vegetation seems almost impossible. It is a plant of unfailing growth; it will live without rain to moisten the soil; you can scarcely exterminate it if you try; it requires but little cultivation, and at an expense below that of almost any other agricultural product; and its value is substantial."

The chief home of the Sisal plant is Yucatan. It is also found abundantly in Mexico, Honduras, and Central America. It has been successfully introduced into Florida. In Yucatan there are two varieties, the yashquin producing the best fibre, and the sacquin yielding the greatest quantity. The cultivation of the plant is very simple. The land selected is strong and dry. The young plants, 2ft. to 3ft. high, are set out about 15ft. apart, and weeded twice yearly. In four to five years the lower

leaves are cut off, the operation being repeated annually for 10 years and upwards. At intervals of two years five to 10 new shoots are thrown up; one of these is left to replace the parent stem, while the others are removed to form new plantations. The leaves measure 2ft. to 6ft. long, and 4in. to 6in. wide. The annual yield of clean fibre is about one ton an acre.

The native mode of preparing the fibres is to scrape away the pulp from each side of the leaf by means of a triangular strip of hard wood, with a sharp edge, working against a board. Washing and sun-drying complete the operation. The process is well suited to preserve the fibre, but it is very slow, the yield being only 5lb. to 6lb. a man per diem. Beating the leaves, steeping them in an alkaline solution, or retting them in water, and hackling or combing the fibres, have been unsuccessfully attempted. Special machines, however, have been successfully introduced. The fibre is sun dried for about four hours, and is then pressed into bales, usually 3ft. by 2ft. by 2ft., and weighing 300lb. to 400lb. The bulk of the fibre is consumed by the United States. New York is the chief importer. Small quantities are shipped to London, Liverpool, and Hamburg. The market value is regulated by the price of Manilla hemp; being somewhat weaker, it brings £5 to £10 a ton less. London prices fluctuate between £20 and £30 a ton. Its sole commercial application seems to be for the manufacture of cordage; locally, its use is extended to mats, hammocks, and coarse sacking. The finest twine is made from it in Merida, Yucatan. Perhaps a reconsideration of its merits in this country might be desirable, as in the more advanced state of manipulation it might be found to possess qualities that would render it adaptable to further uses than has been the case hitherto.

WAGES IN MINOR TEXTILE TRADES.

Mr. R. Giffen, in his report to the Secretary of the Board of Trade on the rates of wages in the minor textile trades of the United Kingdom, says—In a previous report (C. 5,807 of 1889) dealing with the larger textile trades—cotton, woollen, worsted, linen—the first instalment was presented of that census of wages which it has been one of the objects of the Board of Trade to carry out, in pursuance of the resolution of the House of Commons of March, 1886, for the collection of statistics relating to labour. In the tables presented herewith, dealing with the minor textile trades, a second instalment is presented, and a third instalment dealing with the coal and iron mining trades is in course of preparation. The Department has still to lament the unavoidable delays which have taken place in issuing the returns. These have been due principally to the inadequacy of the staff provided for a work which has proved unexpectedly laborious; but in any case great delay could not well have been avoided. One of the general objects in view has been to obtain materials for arriving ultimately at a statement of the aggregate earnings of the working classes throughout the country, and of the average amount per head, and incidentally to obtain a view of the relative positions of different trades and industries according to the average wages of those employed. The number of schedules issued altogether was 79,041, of which 10,681 have been returned, making 14 per cent. of the total, but the proportion of the industrial population covered by the returns to the total of such population is even greater. To the following textile trades schedules were issued:—Jute, hemp, etc., silk, carpet, hosiery, lace, smallwares, manufacture of flock and shoddy, hair, elastic web, lamp and candle wick, and handkerchiefs.

Factory population in the textile trades according to Factory Return, 1885, compared with the numbers comprised in the accompanying returns:

Trades.	Total employed according to Factory Return.	Numbers given in Rates of Wages Returns.	Proportion returned to Total employed. Per cent.
Jute	(a) 36,269	(a) 18,552	51
Hemp, etc.	(b) 9,276	(b) (c) 3,624	39
Silk	(a) 42,995	(d) 9,461	22
Carpet	Cannot be given	2,588	—
Hosiery	(a) 19,536	(d) 2,814	14
Lace	(c) 15,886	(e) 2,022	13
Smallwares	Cannot be given	14,171	—
Flock & Shoddy, manufacture of	Cannot be given	(f) 764	—
Hair	2,239	(f) 641	—
Elastic Web	3,824	758	20
Lamp and Candle Wick	Cannot be given	227	—
Handkerchiefs	Cannot be given	3,540	—

(a) Scotland only. (b) Exclusive of Ireland. (c) These figures include some rope-walks and other works not included in the Factory Return. (d) Exclusive of outworkers. (e) The numbers in the Factory Return exclude persons employed in finishing warehouses; the returns made to the Board of Trade include such persons. (f) Exclusive of London.

Here, again, the percentages of the population covered by the returns are very large, especially in the larger industries, though not generally quite so large as in the leading textile trades (see first report, C 5,807, p. vii.), where the proportion ranged from 26 to 36 per cent. Still the proportions are quite high enough to make a satisfactory basis for averages. It has to be noted, however, that the total numbers actually employed in the trades here dealt with are much smaller than those in the leading textile trades which were the subject of the first report. That report embraced a factory population of close upon 900,000; in the present report, although there is a larger number of trades, the factory population comprised in the seven trades for which such particulars can be given is only 130,000, and even making an estimate for the five trades for which there are not the necessary particulars in the factory return, we should still hardly arrive at a greater figure than 220,000. At the same time it has to be noted specially that in one or two of the trades here dealt with, the factory population is itself only a portion of the wages-earning classes in the industry.

Comparison of normal weekly wages in the undermentioned trades in 1886:—

MINOR TEXTILE TRADES.

Trades.	Men.	Lads and Boys.	Women.	Girls.
	s. d.	s. d.	s. d.	s. d.
Jute	19 4 .. 6 8	.. 9 7	.. 4 8	
Hemp, etc.	23 6 .. 6 0	.. 9 8	.. 5 1	
Silk	22 3 .. 7 2	.. 10 1	.. 5 8	
Carpet	26 7 .. 8 4	.. 11 1	.. 6 11	
Hosiery	24 5 .. *9 6	.. 11 6	.. *8 3	
Lace	27 3 .. 9 4	.. 12 8	.. 6 2	
Smallwares	30 2 .. 6 9	.. 10 9	.. 5 9	
Flock and Shoddy, manufacture of	21 2 ..*10 5	.. 9 9	.. *4 6	
Hair, Elastic Web, and Lamp and Candle Wick	25 0 .. 7 5	.. 9 10	.. 5 11	
LEADING TEXTILE TRADES, FROM PREVIOUS REPORT.				
Cotton	25 3 .. 9 4	.. 15 3	.. 6 10	
Woollen	23 2 .. 8 6	.. 13 3	.. 7 5	
Worsted	23 4 .. 6 6	.. 11 11	.. 6 2	
Linen	19 9 .. 6 3	.. 8 11	.. 4 11	

* No half-timers included.

Putting all the trades together, and including the four leading textile trades dealt with in the former report, we should have the following maximum, minimum, and average rate of wages as prevailing in the textile trades, to which the figures for cotton, as the largest of all, are appended for comparison—

	Maximum.	Minimum.	Average.	Cotton only
	£ s.	£ s.	£ s.	£ s.
Men	70 18	50 5	61 10	65 13
Lads and boys	47 1	15 13	21 9	24 4
Women	89 15	23 3	53 1	59 15
Girls	21 10	11 14	16 9	17 17

Thus cotton is in each case somewhat above the average, except in the case of women, where cotton is at the maximum, and very considerably above the average. The very high wages for women in Lancashire were the subject of comment in the first report, and this and other differences in different trades cannot but attract attention. It may be noticed also that the average, as here brought out, corresponds very closely with the mean of the four leading textiles themselves.

Average wages in undermentioned trades, and in Scotland and Ireland respectively:—

	General Average.	Scotland.	Ireland
	£	£	£
Cotton	26	28	—
Woollen	25	31*	21
Worsted	28	19	—
Linen	25	20†	22†
Jute	26‡	28	—
Hemp, &c.	32	30	—
Silk	27	30	—
Carpet	35	35	—
Hosiery	34	33	—
Smallwares	27	—	28

* Mean of four districts. † Mean of two districts. ‡ Scotland only.

Thus there are some exceptions, such as silk, where the character of the trade and local depression seem to have lowered the wages in the English districts below the average for the time; but, as a rule, Scotch and Irish wages, where a comparison can be made, are below the average. In the case of Ireland, where a comparison can be made, the rates are about one-fourth to one-third less than the average. This is quite consistent with higher wages in Ireland for a few picked individuals than English average, as the detailed tables shew.

Statement shewing the proportion per cent. of men, lads, and boys, women, and girls respectively, employed in the undermentioned trades, to the total employed in such trades:—

	Men.	Lads and Boys.	Women.	Girls.
Jute	15·1	13·8	58·8	12·3
Hemp, etc.	34·0	23·0	35·8	7·2
Silk	22·3	8·2	51·5	18·0
Carpet	36·0	12·4	36·9	14·7
Hosiery	22·7	3·2	61·8	5·4
Smallwares	19·3	9·2	54·2	15·2
Flock and Shoddy, manufacture of	43·2	4·3	51·7	0·8
Hair	9·5	6·5	72·9	11·1
Elastic Web	22·5	3·1	49·6	24·7
Lamp and Candle Wick	5·7	1·7	56·4	35·2
Cotton	22·5	16·7	44·4	16·4
Woollen	19·3	12·4	45·3	9·0
Worsted	19·2	15·3	46·5	19·0
Linen	17·2	10·5	55·4	16·9

The correspondence is not quite exact, but a comparison is nevertheless useful between the average annual earnings per head shown in different trades, putting all classes together, and the proportionate numbers of men and women employed. The percentages are subject to the observation that as between men, and lads and boys, and as between women and girls, the distinction may not be always exactly made; but where doubts may arise a comparsion can still be made between the proportions of male and female labour altogether.

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

Buyers and sellers in our market have succeeded in coming sufficiently near to one another to be able to transact a fair amount of business. In both yarns and cloth in the aggregate a fair weight of orders has been put through, and the demand still existing shews that when the market is regarded as safe a considerable addition will be made to what has gone before. The holiday season, so far as spinning and manufacturing establishments are concerned, has now practically terminated, the end having come two or three weeks sooner than ordinarily owing to the improved arrangements that have been made. With no cotton corner to distract attention and deter from business, the prospects for the autumn are regarded as very satisfactory, provided the mania for striking on a large scale does not infect our operative classes. The greater experience and prudence of their leaders, combined with the ridiculous and injurious fiascos attendant upon strikes in other trades, will probably be sufficient to deter from the attempt to excite any in this great industry.

COTTON.—The raw material has once again become comparatively steady, and the demand from the trade is fairly good at current rates, but sellers are only just beginning to regain such confidence as to resist further reductions. On the opening day of the week under review the Liverpool market was slightly irregular. Americans being the turn easier, whilst Egyptians were much neglected, and holders pressing sales. The result was that prices of this description declined $\frac{1}{16}$d. to $\frac{1}{8}$d., but on this basis are still too high, as many sellers are reported to be disposing of their holdings at $\frac{1}{8}$d. below the official rates. Brazilian has been in limited demand throughout the week, quotations being unchanged. Rough Peruvians are also unchanged, but smooth have declined $\frac{1}{16}$d. Indian cottons, on the whole, were irregular and rather lower; Bengals, however, being in exceptionally good demand, and advancing $\frac{1}{16}$d. Since then, with a fairly full demand, the market has been steady with unchanged prices, excepting in Bengals, which have made a further advance of $\frac{1}{8}$d. Futures are settling down from the recent storm, having been free from the great fluctuations of the past two or three weeks. The alterations that have taken place have not ranged beyond 2 to 3 points, and the week closed with 1 to 1½ points decline from our last report for September to October-November, but unchanged in the more distant positions. The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forwarded.	Sales.	Stock.	Actual Export
American	10,912..	46,955..	41,070..	—	1,505
Brazilian	1,579..	1,231..	500..	—	30
Egyptian	407..	1,837..	2,170..	—	388
W. Indian	4,120..	1,064..	1,390..	—	353
E. Indian	3,994..	3,414..	9,110..	—	962
Total	21,010	54,501	54,240	—	3,238

The following quotations are from the same source:—

	G.O.	L.M.	Mid.	G.M.	M.F.
American	5 5/16*	5 5/16*	5 11/16*	5 15/16*	6 1/16*
			M.F.	Fair.	G.F.
Pernam			6	6 1/16	6 1/16
Ceara			—	6 1/16	6 1/16
Paraiba			—	6 1/16	6 1/16
Maranham			—*	—*	—*
			Fair.	G.F.	Gd.
Egyptian			6 1/16	6 1/16	7 1/16
Ditto, white			—*	—*	—*
	Fr.	F.F.	G.F.	F.G.F.	Gd.	F.G.	Fine
M.G. Broach	—	—	—	5 1/16	5 1/16	5 1/16	
Dhollerah	3 1/16	3 1/16	4	4 1/16	4 1/16	4 1/16	5 1/16
Oomra	4 1/16*	4 1/16	4 1/16	4 1/16	4 1/16	4 1/16	5 1/16*
Bengal	—	—	3 1/16	3 1/16	3 1/16	4 1/16	4 1/16*
Tinnivelly	4 1/16*	—	4 1/16	5 1/16	5 1/16	—	—

* Nominal.

YARNS.—The week's stoppage for the holidays at Oldham has proved highly advantageous for spinners, as it has made yarns scarce, and greatly strengthened producers at a very critical moment. If any change can be said to have taken place producers have the best of it, as in many cases they are asking a slight advance upon the prices of last week, though as yet it cannot be said to have been obtained to any extent. Weft yarns have been exceptionally scarce. There is a good demand for export yarn in bundles, and only a slight difference exists between buyers and sellers, which may soon be bridged over. Bolton yarns, taken all round, are the turn better, but as yet not much trade is passing or visible in the near future. On the whole, however, sellers have the advantage upon the proceedings of the week.

CLOTH.—In cloth the business put through on Indian account has been of larger volume than of late, and manufacturers are more reluctant sellers than they were, their engagements having become of sufficient magnitude to enable them to stand out for full prices, and (exceptionally) to allow them to demand an advance. Best qualities of printing cloths being fairly well in order keep firm in value, though there is not a large demand at the moment. Burnley makes are in fairly good supply, and the demand is not large enough to encourage manufacturers to attempt advances. The specialities consumed in the home trade are in fair average request at unchanged rates. In heavy goods, buyers in the home-trade houses are shewing more disposition to give out orders for their winter season's supplies. Altogether prospects are much better at the moment than they were at the corresponding season last year, inasmuch as the struggle that was then in front of the trade is in this instance behind.

WOOLLENS AND WORSTEDS.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 16th Sept., say :—

WOOL.—The Scotch wool market continues quiet but firm. There is only moderate business passing, but full rates are maintained. Reports generally are better, and stocks are held with confidence.

SHEEP SKINS.—The supply has not been so heavy. Lots were mostly of good quality, which met a fair competition without much change in values.

LONDON.

Messrs. H. Schwartze and Co., in their report dated September 16th, say :—

The fourth series of London sales of Colonial wool commenced to-day with catalogues comprising :—

	Bales.			Bales.
Sydney.....	1,488	out of an	available total of	61,000
Queensland	646	,,	,,	26,000
Port Phillip	655	,,	,,	30,000
Adelaide	454	,,	,,	11,500
Tasmania	18	,,	,,	5,000
Swan River.....	10	,,	,,	500
New Zealand....	2,337	,,	,,	80,000
Cape	1,634	,,	,,	44,000
	7,242	out of an available total of		264,000

There was a good attendance of both home and foreign buyers, and the biddings were made with fair spirit. The best classes of Australian grease and scoured shewed a hardening tendency, but the bulk of Australian wools, both merino and cross-bred, ruled on a par with the closing rates of last series. The same may on the average be said of Cape wools. Natal grease was perhaps slightly higher, scoured sorts on the other hand sold if anything in favour of buyers. Taking the market all round, the range of prices is practically the same as at the close in July.

The arrivals in time comprise 184,600 bales (126,300 bales Australasian and 58,300 bales Cape). Deducting what has been forwarded direct and sold privately, but adding the wools held over from last series, the total available will amount to about 264,000 bales. As at present arranged the sales will last until the 14th October. Bank rate 4 per cent.

HUDDERSFIELD.

Business has been rather dull, the attendance of buyers not having been up to the average. Fancy worsteds and serges keep well to the front. The Continental and British North American markets are absorbing fair quantities of goods.

BRADFORD.

There is a firmer feeling in our wool market, the purchases made having been upon the basis of higher prices. The orders placed are, however, only small, being confined to the supply of immediate wants. Mohair and alpaca are unchanged. Merinos and cross-bred botanics are firmly held, and stocks are said to be somewhat low. Yarns are not inquired for freely, and merchants experience great difficulty in putting new business through. Two-folds are unchanged in price, although for some descriptions quotations are slightly higher. Spinners are, on the whole, well engaged. Following the firmness in Botany wool, Botany yarns have been advanced, and orders have been numerous. There is not much doing in pieces. Italians for Japan are well ordered.

ROCHDALE.

The warm weather has had a deterrent effect upon business. Prices are unchanged. There is some hope that rates will advance, but, so far, there are no signs of such a change.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, 17th Sept., 1890.

The market here is again quiet. Jute and all goods made from jute are easier to buy. R.F.C. is done at £15, and with the prospect of a large crop spinners are shy, even at these reduced prices.

Jute yarn is done at 1s. 3d. for 8lb. cop, and for heavies 1¼d. is paid for November delivery. Hessians are quiet, and except for the very best qualities lower prices are accepted.

For broad goods, with colour, the makers refuse to make any concession, but for all the lower jute fabrics the turn of the market is in favour of the buyer.

Flax is firmer, and for tows a rise of 30s. a ton is paid.

Flax yarns are firm at an advance of ¼d. to ½d. per spindle, and tow yarns are quoted to-day at ½d. more for wefts, and 1d. for warps.

Linens are more inquired for, and this applies to both Forfarshire and Fifeshire goods.

Arbroath remains busy. All the looms are engaged, and the price of canvas is against the buyer.

Dundee fancy jute goods are in fair demand, and for all twines, cords, and ropes there is an excellent market. The beautiful weather of the past fortnight has altogether changed the aspect of the country. The fields are being rapidly cleared of a crop of unusual weight, and stacks are filling corn-yards which have never got a shower. This puts every industry dependent on agriculture into better heart.

MANCHESTER.

Business this week has not been so satisfactory as was hoped. The weather has been against the sale of heavy stuff, and damasks and other goods of that class have not moved so freely as was the case a short time ago. The American shipments have, however, been very large, but repeats are, of course, out of the question at present.

HOSIERY AND LACE.

NOTTINGHAM.

There is no change for the better to report, and an enumeration of the state of things in the various sections of the trade would only be a repetition of what has previously been said. Spanish and Chantilly laces are quiet, and plain goods are dull. For fancy millinery laces there is not much doing.

LEICESTER.

There has not been much business put through in wool, although this week's sales shew that stocks are not heavy, and that purchases will have to be made. Bradford spinners have advanced their quotations. Hosiery stocks light, manufacturers having worked principally to order.

DRY GOODS.

MANCHESTER.

Finer weather has given an impetus to the trade, although it will not be possible to make up for the leeway caused by the prolonged rains which prevailed up to a fortnight ago. Fancy goods have moved off fairly well, but Tuesday in some of the houses making a specialty of articles of this description was rather slow. Passementerie in new styles has been brought forward. It has been designed to suit the severe styles of the tailor-made dresses now in vogue. The most remarkable feature of the week has been the activity of the United States shipping trade, which has, of course, been caused by the desire on the part of merchants to get all consignments intended for the States on the other side by October 1st. The Inman, White Star, and Cunard boats which sailed this week took very large cargoes, and the number of packages for which accommodation could not be found was enormous.

SILK.

LONDON.

THURSDAY.—London Produce Clearing House quotations of 5¾ Tsatlee : September 12s. 5d., October 12s. 5d., November 12s. 6d., December, 12s. 7d., January, 12s. 7d., February 12s. 8d., March 12s. 9d. per lb. Sales registered, 20 bales.

THE KIDDERMINSTER CARPET TRADE.

There is a gradual improvement observable in the trade, and machinery in the Brussels branch is becoming better engaged week by week. Still there is plenty of room for further change in this direction, and it must be some weeks yet before manufacturers can be termed busy. Almost the whole of the firms' travellers are now out on the road again seeking orders, and although no very large transactions are spoken of as having been carried through up to the present, the number of orders booked are above the average, and reports reaching home regarding the probable requirements of customers are deemed exceedingly encouraging.

In the tapestry branch, the outlook is regarded by some manufacturers as more favourable. Last season the demand for these goods was considered better than for some years, and it is hoped that the coming season will be marked by further progress.

For Royal Axminster inquiries are stated to have opened well, and a considerable amount of business is expected in this department. In several instances so confident are manufacturers in the future success of these goods, that a large amount of capital is being sunk in building extensions and in the erection of new looms. Prices for all goods remain firm, and at the annual meeting of the Brussels manufacturers, held here last week, it was unanimously decided to adhere strictly to the advanced list issued in the winter. The meeting was largely attended, nearly the whole of the local manufacturers being present, as well as those from Yorkshire and Scotland.

The condition of the wool market is more satisfactory than for some weeks past, and the stronger tone exhibited in country fairs and in the Bradford market has led to a sensible increase in the number of transactions. A fairly large supply of the material has come in from all parts this week, and in most cases spinners have been called upon to pay an advance. The improvement in this branch has produced a little eagerness in manufacturers to give out their contracts for worsted yarns. Spinners are decidedly firm in their quotations, and for the present manufacturers prolong negotiations as long as possible in the hope of obtaining some slight concession.

Joint Stock and Financial News.

COTTON COMPANIES' REPORTS.

DARWEN SPINNING COMPANY, LIMITED.—The directors' report on the working of this company for the past quarter, ending August 30th, states that the net profit amounted to £339 10s. 10d. on the trade account. The balance to the credit of the profit and loss account amounted to £353 9s., out of which it is recommended to pay a dividend of 5 per cent. per annum, which will absorb £349 11s. In the trade account the total expenditure was £12,079, which included £9,326 for cotton and carriage, and the balance for distribution. The income from yarns and waste was £12,079.

NEW COMPANIES.

NORTH BRITISH BOILER AND MACHINERY INSURANCE COMPANY.

Registered in Scotland by Mr. J. Burness, W.S., with a capital of £75,000 in £1 shares. Object, to insure against damage arising from explosion of steam boilers and the breaking down of steam engines, with the buildings and machinery of the works in which these are set, the policy of the company covering loss of every description to the extent insured; to periodically inspect and report on the condition of steam boilers and steam engines, and advise as to their management, and as to the most recent developments of engineering science; to advise as to boilers, engines, and other engineering structures; surveying the manufacturing of all kinds of plant having relation to, or required in engineering structures; comprising the testing of the various metals used in connection therewith; to carry on the business of general consulting engineers in all its branches, to insure employers

against claims made against them at the instance of their employés under the Employers' Liability Act and at common law; to purchase the goodwill or any interest of any trade or business of the same nature; to carry on the business of engineers and boiler-makers and repairers of engines and boilers. The first subscribers are:—

	Shares.
R. Moore, C.E., 13, Claremont-gardens, Glasgow	1
R. Sharp, iron merchant, Coatbridge	1
J. C. Adamson, engineer, Airdrie	1
R. Highgate, engineer, Shettleston, Glasgow	1
A. Maclay, professor of engineering, 38, Bath-street, Glasgow	1
G. Stevenson, consulting engineer, 117, Onslow-drive, Denniston, Glasgow	1
S. Fowlis, 140, Hope-street, Glasgow	1

The directors shall not be less than three nor more than eight in number. The first directors are to be Ralph Moore, C. and M.E., Glasgow; Bailey Robert Sharp, iron and steel merchant, Coatbridge; Robert Clark, Armiston Coal Company, Gorebridge; Robert Highgate, of Pollock, Nitrab, and Highgate, Firpark Iron Works, Shettleston, Glasgow, and Britannia Iron Works, Manchester; J. C. Adamson, J.P., Airdrie Iron Company, Airdrie; and Professor Alexander MacLay, B.Sc., C.E., Glasgow and West of Scotland Technical College. These shall have power to appoint an additional director within two months after the registration of the company, and shall hold office until the first general meeting of the company. The qualification shall be a holding of not less than 200 shares of the company in his own right. The remuneration to be determined at a general meeting of the shareholders,

THE BENT LEY SILK MILLS, LIMITED.

Registered by Ramsden, Radcliffe, and Co., 80, Coleman-street, E.C., with a capital of £20,000 in £5 shares. Object, to carry on the businesses of silk spinners, silk throwsters, silk manufacturers, silk merchants, bleachers, dyers, and finishers, and to purchase, prepare, spin, manufacture, and deal in silk, cotton, woollen, worsted, and other fibrous substances, products, and materials. The first subscribers are:—

	Shares.
J. Sugden, Folly Hall, Huddersfield	1
D. Taylor, Meltham Mills, near Huddersfield	1
W. Haigh, Meltham, near Huddersfield	1
R. Mellor, Meltham, near Huddersfield	1
H. Holroyd, Meltham, near Huddersfield	1
H. Whitwam, Stanley Mills, Golcar	1
J. H. Haigh, Meltham, near Huddersfield	1

There shall be seven directors. The first are the signatories to the memorandum of association. Qualification, 20 shares. Remuneration to be determined in general meeting.

JOHN SMITH AND SONS, LIMITED.

Registered by C. Doubble, 14, Serjeants'-inn, Temple, E. C., with a capital of £250,000 in £100 shares. Object, to acquire the business of John Smith and Sons, of Field Head Mills, Bradford, wool combers and worsted spinners; to carry on the business of wool merchants, wool combers, worsted and woollen spinners, yarn merchants, dyers, grease extractors, and mill owners. The first subscribers are:—

	Shares. Pref.	Ord.
I. Smith, Field Head Mills, Bradford	10	—
J. W. Smith, Bradford	1	—
Mrs. Smith, Field House, Daisy-hill, Bradford	—	1
B. Smith, Temple Bank, Daisy-hill, Bradford	—	1
J. Smith, Bradford	—	1
J. White, Mornington-villas, Bradford	—	1
F. White, Farcliffe-road, Bradford	—	1

There shall not be less than two nor more than five directors. The first are Isaac Smith and John William Smith, the former being appointed permanent chairman. Remuneration to be determined in general meeting. Qualification, being a member of the company.

THE NEVILLE MILL COMPANY, LIMITED, OLDHAM.

Registered by Charles Doubble, 14, Serjeants' Inn, Temple, E.C., with a capital of £70,000 in £5 shares. Object, to acquire the cotton mill known as Neville Mill, Westwood, Oldham, and to carry on the businesses of spinning, doubling, weaving, &c., in accordance with an agreement which is fully detailed in clause 3 of the company's articles of association. The first subscribers are:—

	Shares.
J. Smith, 17, Werneth Hall-road, Oldham	100
J. Bunting, 115, Union-street, Oldham	100
R. Harrison, 164, Middleton-road, Oldham	100
J. Mills, 138, Manchester-road, Oldham	100
J. Halliwell, 499, Shaw-road, Royton	100
J. Taylor, 21, Refuge-street, Shaw	100
T. Holden, 177, Greenacres-road, Oldham	100

There shall not be less than five nor more than seven directors. The first are John Bunting, James Smith, Joseph Mills, James Halliwell, John Taylor, and Thomas Holden. Qualification, 100 shares. Remuneration, £300, divisible.

Gazette News.

NOTICES OF DIVIDENDS.

John Beanland, 41, Whetley-lane, and Benjamin Beanland, 263, Kensington-street, Bradford (trading as John Beanland and Sons and Alfred Whiteley), trading together at Hollings Mill, Sunbridge-road, and Globe Mill, City-road, Bradford, John Beanland trading in co-partnership with Abraham Ambler as A. Ambler and Co. at the said Hollings Mill and Albion Mill, Fulton-street; also in co-partnership with George Hodgson and Jonathan Barker as George Hodgson and Co., at Hall-lane, Bradford, wool merchants and top makers, and worsted spinners, also machine wool combers; 1s. 6d., first.

John Beanland (separate estate), 20s., first and final.

William Mellor, 2, Bath-street, Oldham, yarn agent, 7¾d., first and final.

PARTNERSHIPS DISSOLVED.

John Stott and Company, Watergrove, Wardle, near Rochdale, cotton spinners and farmers.

RECEIVING ORDERS.

J. Cook, as J. Cook and Co., cotton manufacturer, Newby Mill, Remington, Yorkshire.

R. Ashworth, journeyman cloth finisher, lately Wardle, Lancashire.

ADJUDICATIONS.

J. Cook (as J. Cook and Co.), cotton manufacturer, Newby Mill, Remington, Yorkshire.

R. Ashworth, journeyman cloth finisher, lately Wardle, Lancashire.

Patents.

APPLICATIONS FOR PATENTS.

The names in italics within parentheses are those of Communicators of Inventions.
Where Complete Specification accompanies Application an asterisk is suffixed.

8TH TO 13TH SEPTEMBER.

14,174. F. Jackson and T. Everard, 323, High Holborn, London. Stockings.

14,208. J. C. Peache, 22, Southampton-buildings, London. Shearing sheep. (*A. E. Peache*, New Zealand.)

14,210. Ida Bucholz, 33, Southampton Buildings, London. Apparatus for removing stains from fabrics.

14,213. R. Ainscow and J. Whalley, 4, St. Ann's-square, Manchester. Ring frames for spinning and doubling.

14,230. S. Darragh, 70, Wellington-street, Glasgow. Loom temples.

14,242. W. L. Wise, 46, Lincoln's Inn Fields, London. Ring spinning machines. (*Ritter, Rittmayer & Co.*, Austria.)

14,246. D. Gantillon, 55, Chancery-lane, London. Mixing silk or mixed silk fabrics to give them the appearance of china crape.

14,302. T. Ingram, 4, St. Ann's-square, Manchester. Dyeing cotton.

14,372. J. Robertshaw, 46A, Market-street, Manchester. Dyeing, sizing, and washing machines.

14,399. E. T. Aucher, 28, Southampton, Buildings, London. Dyeing raw cotton aniline black.

14,416. J. Y. Johnson, 47, Lincoln's Inn Fields, London. New amido-azo compounds and azo-dyes therefrom. (*Badische Anilin and Soda Fabrik*, Germany.)

14,423. Thomas Wrigley, Manchester. Ring and traveller spinning and doubling frames.

14,432. J. Dawson and B. Hirsch, Kirkheaton Colour Works, Huddersfield. A substantive cotton colour.

14,440. S. Thompson, 8, Quality Court, London. Picking motion of looms.

14,449. R. Hohp, 1, St. James's-square, Manchester. Stop motion applicable to ring spinning frames.

14,451. A. Flather, W. Flather, and D. Wright, 71, Ashgrove, Bradford. Jacquard machines.

14,453. J. W. W. Shaw and J. Stott, Sunbridge Chambers, Bradford. Apparatus applicable to tentering machines.

14,457. F. Sudbury, 78, Fleet-street, London. Traverse-warp taffeta machines.

14,472. A. Levy and W. Start, 45, Southampton Buildings, London. Fashioned knit fabrics.

SPECIFICATIONS PUBLISHED.

1889.

14,802. Revis and others. Knitting machines. 8d.
14,960. Burton. Spinning, etc., machines. 6d.
15,850. Thomson and Seel. Carding engines. 6d.
16,014. Clegg and others. Gill boxes. 6d.
16,212. Thompson (*Warner and others*). Looms. 8d.
16,553. Haslam and Marshall. Looms. 8d.
16,708. Baswitz. Making textiles waterproof, etc. 6d.
16,729. Stell. Doubling wool, etc. 8d.
16,769. Buckley. Cleaning cotton, etc. 6d.
16,910. Craig and Harding. Wool combing machine. 8d.
17,971. Lake (*J. Leonhardt and Co.*). Colouring matters. 4d.
19,490. Schreiner. Dyeing aniline black. 4d.

1890.

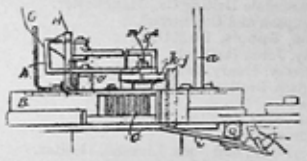
1,240. Scott and Williams. Knitting. 8d.
1,663. Taylor. Textile fibres. 6d.
6,226. Walsh. Ring frames. 6d.
8,538. Mick and others. Embroidering machines. 8d.
8,573. The Serrell Automatic Silk Reeling Company, Ld. Reeling silk cocoons. 6d.

ABSTRACTS OF SPECIFICATIONS.

6,519. April 16, 1889. **Looms.** W. P. Thompson, 6, Lord-street, Liverpool.—(*J. H. Mohr; Flensburg, Germany.*)

Picking mechanism.—The apparatus is specially applicable for ribbon weaving, for making the laces or edgings. In addition to the ordinary reciprocating shuttles working in the race, one or more shuttles having a rotatory motion are employed. These are carried by their under parts in I-section guides, carrying circular toothed racks, which are operated through toothed wheels from a crank shaft. The weft floating over the top of the ribbons is cut to form the laces or edgings. [6½d. *Drawings.*]

6,598. April 17, 1889. **Knitting.** S. Davies and F. Moore, 67, Granby-street, J. Palmer, Welland-street, Highfields, and E. Newton, 8, Clarendon Park-road, all in Leicester.



Circular machines.—Splicing.—The ordinary thread G and the splicing thread H both pass through the tube *c*, the latter thread being snapped at intervals between a fixed jaw, and a movable one at the end of the lever *g4*. The bobbin for the splicing thread is carried by the standard *a* on the rotating cam ring C for operating the yarn or web holders. The lever *h* draws down a certain amount of the splicing thread, and releases it again when it is required to re-commence splicing. The levers *g4*, *h* are operated alternately by a cam *m* on the ratchet wheel *k*, which is operated by sliding bolts *j* on the fixed annular shield or guard R. These bolts are raised and lowered as required by a forked lever *i*, operated by levers from wedge-pieces on a pattern chain. [1s.]

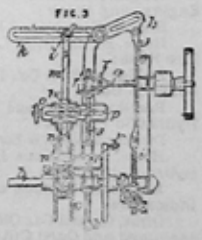
6,621. April 18, 1889. **Spinning.** J. Jones, Tame Side Mill, Dukinfield

Carding engines.—For grinding carding engine flats the latter are forced upwards by a bracket or other suitable means against an adjustable bracket carried by a slide which supports the grinding roller. The under surface of the adjustable bracket is formed with a step, the surfaces on each side of which are slightly inclined to one another so as to give the necessary heel to the flats. [6½d. *Drawings.*]

6,639. April 18, 1889. **Warping machines.** E. and W. A. Rothwell, Linnyshaw Mill, Walkden, near Bolton.

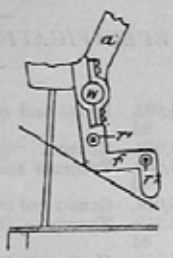
The presser bar of sectional machines is carried by an holder *a* connected to a horizontal rod *m*, which slides in guides *o*. The rod is operated through a lever *k* and rod *j* from a screw *i* moved forward by ratchet and screwed boss mechanism operated from a cam on the section shaft *b*. The nut *i* is slackened for winding a trial section, after which it is tightened for the next winding. Hand-worked gearing operating the screw *i* and moving the presser to and fro is provided. The shaft *b* is driven one way or the other from a pulley shaft *g* through bevel gearing *r*, *r1*, shaft *s*, friction pulley *s1*, and plates *o*, *b1*, the shaft *s* being mounted in swivel bearings to admit of shifting by means of a handle *t*. [8½d.]

FIG. 3



6,652. April 18, 1889. **Looms.** C. O. Kramer, Chemnitz, Germany.

Shuttle guards.—A shaft W on the lay carries a number of angle pieces *f* connected by wires or rods *r*¹, *r*², which carry tubes between the angle pieces, the whole being tightened by screw nuts. Levers *a* at each end of the shaft are connected with "draught bars" mounted preferably on the loom frame, so that the pieces *f* are caused to pass between the warp threads on the back motion of the lay, and to be moved clear of them on the beat-up. The draught bars are mounted in special bearings which admit of the guard being raised clear of the warp by hand at any time. [6½d.]



6,691. April 18, 1889. **Traverse warp machines.** J. Updale, 4, Falcon Avenue, Falcon-street, London.

Milanese taffeta is made with stripes or bands of thickened work across the fabric for the tips of glove fingers, etc., by causing the taking-up bar to place two or more laps on the needles before each pressing operation. For this purpose the cams are formed to produce two or more courses at each revolution, and certain of them are made with adjustable pieces A, as shewn, so that after the first lap the presser bar may remain out of action, and the sinkers down, until one or more additional laps have been placed on the needles. The tension on the threads passing from the bob' bins is reduced, at the moment of pressing, by lifting all the tension weights by levers, actuated by a suitable cam. [1s.]

6,634. April 18, 1889. **Knitting.** The Nottingham Manufacturing Company, Limited, Station-street, Nottingham, J. Groves, 4, Burton-street, and J. Wheatall, 27, Schoolstreet, Loughborough.

Straight-bar machines.—Letters, marks, or other openwork patterns, are varied at will by easy changes of removable parts without necessarily stopping the machine. [8½d. *Drawings.*]

6,701. April 20, 1889. **Spinning.** P. Wilkinson, 13, India Buildings, Cross-street, Manchester.

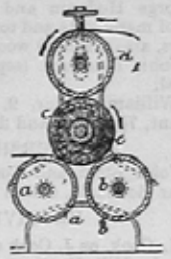
Carding engines.—The flats are driven in the opposite direction to that in which they are usually driven, and they are stripped by a roller, which transfers the lumps and coarse tufts to a taker-in, and is itself completely stripped by the main cylinder. More than one roller may be used if desired. [6½d. *Drawings.*]

6,706. April 20, 1889. **Looms.** G. Milligan (H. C. McCrea & Co., Ltd.), Halifax, and G. H. Briggs, Shelf, near Halifax.

Shedding mechanism.—In order to give a dwell to the shed for the picking, and to operate the harness more quickly during the closing of the shed, the connecting-rod for operating the harness or jacquard is jointed below to a rod oscillating on a fixed stud. This rod is linked to a rod connected to a crank on a stud, which is driven by gearing from the pulley shaft.

6,718. April 20, 1889. **Calendering fabrics.** T. and J. H. Pickles, Cairo, Mills, Burnley.

The bowls or rollers are arranged as shewn, *a*, *b*, *d* being of metal, and *c* of paper or fibrous material, [6½d.]



6,723. April 20, 1889. **Damping yarns or threads and fabrics.** W. Hurst, Rochdale.

Fabrics and yarns or threads are moistened by passing over a band of flannel, felt, etc., which takes over rollers, and dips into a water trough. The quantity of moisture imparted to the yarn, etc., may be controlled by regulating the depth of the water in the trough, or by rotating one of the rollers at a suitable speed by ratchet or other suitable gearing. A bird fountain arrangement is described for maintaining the water in the trough at a constant level. Anti septic or other material may be added to the water if desired. The invention is specially applicable to damping yarns or threads in warping and beaming machines. [1s. *Drawings.*]

Picking mechanism.—To prevent the rebound of the picker after it is withdrawn from the shuttle boxes, the stick is checked by a finger coming against a bowl carried by a bracket on the stick. The finger is bolted to a lever, which is connected to a rod made to oscillate on a fulcrum on the framework. [8½d. *Drawings.*]

6,717. April 20, 1889. **Finishing, bleaching, and dyeing fabrics.** R. Moulding, 3, Marble-street, Oswaldtwistle, near Accrington.

The drawing rollers and revolving bars for transmitting the fabric from one operation to another are covered with wire-cloth to improve the drawing action and prevent the starch, size, dyes, etc., from being pressed out of the fabric. [4½d.]

6,762. April 20, 1889. **Bobbins.** F. J. Brougham, 46, Lincoln's Inn Fields, Middlesex. —(*Messrs. Abt Brothers; Enshein, Germany.*)

Several methods are described of uniting the wooden heads of bobbins to paper barrels, as by screw and nut arrangements; by clamping the barrel between the head and a brush, assisted, if necessary, by wedge plates; by the insertion of suitable filling material between the conical aperture in the head, and a conical part of the bush. The head may be secured by means of a bush having a conical head, the bush holding on to the barrel by means of an annular spring, which is sprung into position; or the bushes may be engaged either with fixed transverse pins in the barrel, or with one another by means of bayonet joints, the annular grooves of the bayonet joints being united in the latter case by longitudinal rods hooked at the ends. Glue or other adhesive material may be used to assist in securing the parts in position. The bushes may be provided at both ends with protecting caps if desired. For producing paper bobbins or tubes such as those described in Specification No. 1681, A.D. 1881, a tube together with plugs and collar pieces, are placed in a mould, provided with a core and filling pieces, and subjected to hydraulic pressure through pieces inserted at the ends, when the whole is compressed into a bobbin of the desired shape. [8½d. *Drawings.*]

TEXTILE MACHINERY, APPLIANCES, &c.—DIRECTORY OF MAKERS.

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Salisbury & Hamer, Blackburn and Manchester.
Unsworth, Geo., Manchester.

Belting:
Greenwood, John, and Co., Ltd., Todmorden.
Reddaway, F., and Co., Pendleton.
Rossendale Belting Co., Manchester.
Sampson and Co., Stroud.

Bobbins, Spools, Shuttles:
Kay, John, Rochdale.
Livesey, Henry, Limited, Blackburn.
Wilson Brothers, Todmorden.

Boilers:
Galloways, Limited, Manchester.

Calenders:
Hoyle, E., and Sons, Limited, Halifax.
Riley, J. H., and Co., Bury.

Card Clothing:
Whiteley, John, & Sons, Halifax.

Cement, Mineral Fusible:
Fox and Williams, Manchester.

Chemicals:
Grimshaw Bros, Clayton, Manchester.

Cop-Tubes:
Jagger & Co., Oldham.

Cop-Tubing Apparatus:
Jagger and Co., Oldham.

Cutters (Spiral) and Ledger Blades:
The Smith's Patents Co., Sheffield.

Gold and Silver Wire:
Makinson, E. and W. G., Preston.

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Donkin, B. and Co., London.

Emery Filleting:
Dronsfield Brothers, Oldham.

Engines:
Goodfellow, Ben., Hyde.
Musgrave and Sons, Ltd., Bolton.

Engineering Work:
Bransby Foundry and Engineering Co., London.
Hoyle, E., and Sons, Limited, Halifax.

Fire Hose:
Reddaway, F., & Co., Pendleton.

Furnace Bars:
Bransby Foundry and Engineering Co., London.

Hydraulic Presses:
Dickinson, Wm., & Sons, Blackburn.
Hoyle, E., and Sons Limited, Halifax.

Hydro-Extractors:
Broadbent, Thomas, and Sons, Huddersfield.

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Orme, G., and Co., Oldham.

Jacquard and Card Cutting Machinery:
Devoge & Co., Manchester.
McMurdo, James, Manchester.

Knitting Machinery:
Harrison, W., Manchester.

Lattices, Pegs, Jacquard Slips, &c.:
Livesey, Henry, Limited, Blackburn.
Stone and Burnett, Preston.

Looms etc.:
Butterworth and Dickinson, Burnley.
Dickinson, Wm., & Sons, Blackburn.
Dugdale, John, and Sons, Blackburn.
Hacking and Co., Bury.
Hall, Robert, and Sons, Bury.
Hutchinson, Hollingworth, and Co., Dobcross, Oldham.
Livesey, Henry, Limited, Blackburn.
Pemberton and Co., Burnley.
Platt Brothers and Co., Limited, Oldham.
Schofield and Kirk, Huddersfield.
Shaw, Wright, Stockport.

Machinery (Cotton):
Bethel, J., Manchester.
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Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hetherington, John, and Sons, Manchester.
Holden, G. H., and Co., Manchester.
Horrocks, John, and Son, Manchester.
Howard and Bullough, Accrington.
Hurst, W., Rochdale.
Lees, Asa, and Co., Limited, Oldham.
Lord Brothers, Todmorden.
Platt Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Tatham, John, and Sons, Limited, Rochdale.
Taylor, Lang and Co., Stalybridge.

Machinery (Dyeing, &c.):
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Heppenstall, E., Huddersfield.
Riley, J. H., and Co., Bury.

Machinery (Silk):
Curtis, Sons and Co., Manchester.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Holden, G. H. and Co., Manchester.
Horrocks, John, and Son, Manchester.
Platt, Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield,
Taylor, Lang and Co., Limited, Stalybridge.

Machinery (Sizing, Filling, &c.)
Dickinson, Wm., & Sons, Blackburn.
Riley, J. H., and Co., Bury.

Machinery (Woollen and Worsted):
Curtis, Sons, and Co., Manchester.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hetherington, John, and Sons, Manchester.
Holden, G. H. and Co., Manchester.
Horrocks, Jno., and Son, Manchester.
Lees, Asa, and Co., Limited, Oldham.
Platt Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield.
Tatham, John, and Sons, Limited, Rochdale.
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Patent Agents:
Bosshardt, F. & Co., Manchester, Oldham, and Stockport.
Thompson, W. P., & Co., Manchester, Liverpool and London.

Pickers, Picking Bands, &c.:
Greenwood, John, Todmorden.

Picker Steepers:
Green, James, Blackburn.

Pistons:
Lancaster and Tonge, Pendleton.

Roller Leather:
Meredith-Jones, J., and Sons, Wrexham.

Shuttles:
Kay, John, Rochdale.
Livesey, Henry, Limited, Blackburn.
Pickles, Robert, Burnley.
Walton and Halstead, Hebden Bridge.
Wilson Brothers, Todmorden.
Greenwood, John, Todmorden.

Sizing and Filling Preparations:
Adley, Tolkien, and Co., Blackburn.
Eastwood, James, Manchester.
"Gloy" Manufacturing Co., London.
Grimshaw Brothers, Clayton, Manchester.

Smoke Consumers:
Greaves, W. McG., Manchester.

Steam Traps:
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Bell, George, and Sons, London.

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Renshaw and Co., Manchester.
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Barlow, H. B., and Co., Cornbrook, Manchester.

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Thomas, G. and Co., Manchester.

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Wallwork, Henry, and Co., Manchester.