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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The Textile Mercury.

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Articles, Correspondence, Reports, Items of News, on all matters of novelty and interest bearing upon the Textile Industries, home or foreign, are solicited. Correspondents should write as briefly as possible, on one side only of the paper, and in all cases give their names and addresses, not necessarily for publication, but as a guarantee of good faith. When payment is expected, an intimation to that effect should be sent with the contribution. The Editor will do his best to return ineligible MSS., if accompanied by the requisite postage stamps, but will not guarantee their safe return.

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All communications to the Editorial department should reach the offices, 23, Strutt Street, Manchester, early in the week in order to receive attention in the next issue.

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Current Topics.

NATURAL-COLOURED COTTON.

There is a grand opening for the realisation of fame and fortune at one stroke to some genius of the future who succeeds in inducing the cotton plant to grow coloured fibres. It seems to be within the power of floriculturists to produce any modifications of the colours of flowers, and to variegate the colours of the leaves of plants, and both of these seem to the uninitiated to be quite as great tasks as changing the hue of the down upon the seed of a plant. The horticulturist likewise does almost what he pleases with our fruits, and were these two masters in the art of development to unite their abilities there is no reason, so far as we can see, why we should not at an early date have a large supply of natural-coloured cottons. If we may credit a Baltimore contemporary, the *Manufacturers' Record*, it would appear that Nature has no insuperable objection to a change in this direction. In a recent issue the *Record* says :—

For two years or more considerable publicity has been given to and no little interest excited by the discovery of red cotton and the efforts to perpetuate its growth. According to the latest report . . . a planter in Alpharetta, Ga., has an acre of cotton, every stalk of which is said to be of a deep red colour, leaf, ball, and bloom. This novel crop is the product of seed derived three years ago from two stalks of red cotton found in a cotton field. If this variety can be perpetuated it will likely mean a fortune to the successful planter.

We should very much like to have a pod of this red cotton, and only regret that our contemporary does not give the name and postal address of this planter so that one might apply to him. Yet there seems to be no insurmountable obstacle to the production of every colour and every shade in the fibre, as we have already every shade of colour from pearly whiteness, cream white, to light and deep yellow in Egyptian and Coconada. And now, according to the above, red has come unsolicited, unlaboured for. What may not be obtained if strenuous efforts be made?

GERMAN UNDERVALUATIONS: THE SHOE BEGINS TO PINCH.

We said some time ago, when the McKinley Administrative Bill was beginning to attract attention in this country, that the stringent clauses with regard to undervaluation and the autocratic powers granted to the Board appointed to enforce the enactment of the measure, would not affect British manufacturers so much as those of Germany, who are notorious for the systematic undervaluation which takes place on shipments to the United States. Our New York correspondent, in his letter which appears in another column, confirms by facts the opinions to which utterance was given in these columns several months since. He mentions the case of a German consignment which was advanced over 52 per cent., while that of a French firm appears, in the opinion of the appraisers, to have been undervalued by 25 per cent. We ourselves may point with pride to the fact that, out of 52 re-appraisments made during the period mentioned by our correspondent, only two were those of English consignments, and in these the charges are very small—"vexatiously" so, as our correspondent puts it. If the Administrative Law only compels our competitors to stop their present practices it will in one sense be a boon to this country, for there will then be a fairer field and less favour—conditions under which British manufacturers can always hold their own.

TECHNICAL EDUCATION IN MACCLESFIELD.

The public of Macclesfield, or that portion thereof interested in technical education, assembled in the Town Hall, on Monday evening, in order to distribute the prizes awarded to its most successful students in the last May Examinations of the City and Guilds of London Institute. Mr. William Mather, M.P., of this city, was the gentleman selected to perform this duty, and afterwards to deliver the customary address. It is needless to say that he discharged both duties with suavity, tact, and skill, such as could not easily be equalled and certainly could not be excelled. The Mayor Mr. Alderman Kershaw, presided, and in his introductory remarks laid stress upon the necessity of the manufacturers of the town spending more money than they were doing upon technical education, as "he did not hesitate to say that those who spent the most money upon designing had made the greatest headway." He might have pointed to a distinguished example upon the platform in the person of Mr. J. O. Nicholson, the president of the Institute, whose interests they were assembled to advance. Technical education is the strong point of Mr. Mather, who has had for many years a very successful institute in connection with his works in Salford, and who has travelled through the United States and a great portion of the Continent, including Russia, investigating the subject, so that it is not surprising that he should have addressed his audience upon the subject. The particular phase he selected was the importance of technical education and the duty of corporations and other local authorities to avail themselves of the advantages placed in their hands by recent legislation for the purpose of promoting it. In this respect the responsibility of Macclesfield was great, and should be loyally discharged. The address was listened to with much attention and was loudly cheered on its conclusion. From the brief report that has come to hand in the columns of our daily contemporaries we are unable to discover whether

or not any speaker discharged the duty of impressing upon the silk manufacturers, or at least the greater portion of them, the necessity of undertaking a course of technical study themselves, as the principals of no English textile industry in the country stand more in need of it than do silk manufacturers. Perhaps it may not be fair to expect the older generation to do this, but surely it is a duty that ought to be recognised and accepted by their sons and the young men who may be aspiring to become leading employés. We trust that this little bit of plain speaking may not be deemed offensive.

THE INDIAN FACTORY COMMISSION.

The Indian Factory Commission has got to work. We gather from the *Times of India* that under the presidency of Surgeon-Major Lethbridge, Inspector of Jails, Bengal, it commenced its sittings very unobtrusively in Bombay, on Monday, the 6th ult., no notification of the event being made public, and the representatives of the press being excluded. "At first sight," says our contemporary, "this would appear to be a somewhat unwise course, but there would seem on inquiry to be excellent reason for it. Dr. Lethbridge informs us that the reasons which have influenced the Commission in their decision are, briefly, that if the public were admitted to the inquiry it might have a deterrent effect upon the frankness of witnesses, while it also might possibly lead to something in the shape of intimidation. As the object of the Commission is to get at the exact truth, and it is vitally important that all the witnesses should have an entirely free mind, we can scarcely find fault with the Commissioners for taking every precaution against the coercion of evidence. Beside Dr. Lethbridge, the Comission includes Rajah Piyare Mohan Mukharji, C.I.E., Mr. Sorabjee Shapurjee Bengali, C.I.E., and Mir Mohamed Husain, Assistant Director of Land Records, North-West Provinces, and these gentlemen will be assisted in their own provinces by—Bombay: Mr. Narayen Meghaji Lokhanday; Bengal: Babu Rasik Lal Ghose; North-West Provinces: Mr. Framjee Mankjee, foreman of the Cawnpore Woollen Mills. The subjects to be inquired into by the Committee are:—

(*a*) Is the limitation of the hours of work for women to eleven in any one day proper and sufficient in view of the conditions under which factory labour is performed in India, and do the female operatives desire that the day's work should be limited to this amount, and, if not, to what amount? (*b*) Should the law draw a distinction between young persons and adults, and, if so, the age of a child being fixed at from 9 to 12, what should be the definition of a young person, and what should be the hours of employment of this class? (*c*) Is the limitation of the hours of work for children to nine in any one day proper and sufficient in view of the nature of the work on which children are employed in Indian factories and the conditions under which they have to perform that work? (*d*) Does clause 5 of the Bill now before the Legislative Council sufficiently provide for holidays for women and children, and is any provision required prescribing an allowance of holidays for adult male operatives? (*e*) Do the male operatives desire that a general working day, and, if so, of what length, should be fixed by law except in cases in which men work in shifts or sets, and, if this change is not desired by the operatives themselves, do the conditions under which they work demand that it should be adopted? (*f*) Do the male operatives desire that there should be compulsory stoppage of work at a fixed time of the day, and, if so, of what length, and should there be an exception in the case of men who work by shifts or sets? If the change is not desired by the operatives themselves, do the conditions under which they work demand that there should be a compulsory stoppage of labour, and, if so, in what manner should it be provided for?

The Commission is expected to sit in Bombay for about a fortnight. The Commissioners will then proceed to the North-West Provinces and Oudh, and on concluding their labours they will proceed to Calcutta, where they will conclude their inquiry and prepare their report." Since commencing its work the Commission has lost no time, having got so far as to begin its sittings in Calcutta in the early part of this week. It continues to sit with closed doors, under which conditions it would be useless to speculate upon the nature of the evidence it has obtained, and it would not be wise to attach too much credence to any reports upon the subject. A letter from Mr. Holt S. Hallett on the subject of the Commission will be found in another column.

THE FRENCH SILK INDUSTRY.

The *Revue des deux Mondes* has devoted an article in a recent issue to the silk trade of France, pointing out the large number of persons directly concerned therein. French sericulture, notwithstanding its decline, gives employment to 150,000 persons—women and young girls—in the south-east departments. In the same region and in some departments of the centre, the north, and the east, reeling and throwing occupy more than 50,000 workers, male and female. As for silk-weaving, it supports an enormous population, scarcely one-third of which is represented by Lyons and Etienne. M. Pariset, in his remarkable work on the silk industry, estimates at more than 230,000 the number of looms occupied in the production of stuffs, ribbons, laces, galloons, carpets, hangings, waistcoats, tulle, silk stockings, and silk waste fabrics. These looms are scattered mainly in the valleys of the Rhône and the Loire, but there are considerable numbers at Paris, Calais, St. Pierre-les-Calais, Roubaix, Lille, Amiens, Tours, Caen, Crepy-en-Valois, Bohain, Troyes, Saint-Omer, Toulouse, Remiremont, etc. If to the weavers are added the workpeople who prepare the yarn, the designers, dyers, printers, finishers, dealers, agents, and loom makers, we get an aggregate of more than 350,000 persons. It is therefore no exaggeration to say that the number of French men and women engaged in the production, reeling, spinning, weaving, and handling of silk, amounts to more than 600,000.

THE IMPROVEMENT OF INDIAN COTTON.

Not before it is wanted, the necessity of improving the quality of Indian cotton is beginning to receive attention. A Madras journal in an article on the deterioration of Indian cotton urges the importance of an earnest attempt being made in India to improve the growth. It has been conclusively established, it is urged, that American cotton can be thoroughly acclimatised in many districts in India; whilst a report on Madras cottons has shewn that in many parts of Southern India a cotton is grown, known as Bourbon, the descendant of a plant originally raised from imported Bourbon seed, but now nothing more than a hybrid. This degeneration is due to no other cause than the absence of the infusion of fresh life by the introduction of fresh seed, which has necessitated a mixing of the local Nadam variety. That the Bourbon strain should have survived so long is ample evidence of the suitability of the soil in the Salem and Coimbatore districts, where it is mainly grown, for that species. India is the natural home of the cotton plant, yet so indifferently has its cultivation been carried on that it has been immeasurably distanced in the race for superiority by its more youthful competitors. The first export of cotton from India to Great Britain occurred in 1783, and the average exported did not for ten years exceed 1,600 bales of 400 lb. each. The poorness of its quality was brought to the notice of the exporters, and the East India Company took such steps as it could for its improvement. In the period of 1800 to 1831 the export to foreign countries increased from 16,600 to 60,000 bales, and it has gone on increasing ever since, till it now exceeds 1,500,000 bales. China has long imported Indian cotton to a large extent, but the Chinese are now beginning to use their own product more extensively, and the trade with India shews signs of falling off. This risk should not be run, for with proper cultivation, careful selection of seed, and judicious irrigation, both the quality and quantity of Indian cotton might be largely increased. If the improvement desired could be effected there need be no doubt about its finding a large and increasing market.

THE BENGAL COTTON AND JUTE MILLS.

According to the Calcutta correspondent of the *Times of India*, matters are not very satisfactory in these branches in the Eastern Presidency. Referring to the cotton and jute trades he says:—"The position of the cotton spinning industry continues bad. As I have already advised you, our mills now produce a larger quantity of cotton yarn than is required for local consumption, and when China, as at present, refuses to buy this surplus production it has to be disposed of here. The result is that prices are forced down to an unremunerative level. I would again recommend you not to touch any of our Southern Bengal Cotton Mill shares at current rates, as, if the present depressed state of trade continues for any length of time, you will probably be able to buy them cheaper later on. In Jute Mill scrip there is little doing, and the market looks weak. I would far rather sell than buy at the present quoted rates. The jute industry seems to be drifting into an unsatisfactory state, and shareholders will need to be cautious." In the latter branch the effect of the McKinley Tariff Act will no doubt be considerable.

"DATING AHEAD" IN THE AMERICAN SILK TRADE.

Statements recently put forward by the silk manufacturers of Newark, Paterson, and other centres in the United States, throw an interesting side-light upon a phase in the industrial aspect of the Republic that has frequently been a matter of surprise to outsiders. Reference has been made in previous issues of *The Textile Mercury* to the wretched condition of the silk business across the Atlantic, owing to the reckless underselling which is constantly going on among the smaller and more needy of the manufacturers. The effect of these practices has, of course, been ruinous, and substantial firms with a good article to sell at a fair price have been unable to carry on their business properly, or with satisfaction to themselves, owing to such suicidal action. The matter has now become so serious that something to remedy the present state of affairs requires to be done, and accordingly a complaint has been made that the raw silk dealers have of late been giving too long credits to small manufacturers in the trade. Long credits affect the manufacturers in a somewhat round-about way. They do not care so much, they assert, for the competition of the small manufacturer so long as he sells his goods at or near the market price; the trouble is that he does not and cannot. The young manufacturer is usually the employé of a silk mill owner. He has no money to buy raw silk, and he goes to a dealer in raw silk in New York and gets credit

for almost any amount. This is the transaction that bothers the big manufacturer. The new comer in the field finds at the close of the first or second month that creditors are troublesome people to have dealings with. His product is not yet in the market, and it is hard to induce the men whom he owes to wait until it is. The result of the whole matter is a hasty sale, at which the stock is allowed to go at a ridiculously low figure in order to realise money to keep the establishment on its feet. It is obvious that where such a state of things prevails legitimate business cannot be carried on with either pleasure or profit. The large manufacturers are therefore contemplating the formation of a combination to compel the raw silk merchants to limit the credit of the small manufacturers.

LISTER'S PROJECTED AMERICAN MILL.

A week or so ago we advised the departure for the States of Messrs. Reixach and Watson, who are directors in the firm of Lister and Co., Manningham Mills, Bradford. On Wednesday a cablegram from Philadelphia was published in this country, announcing that these gentlemen had arrived on the other side, and giving what was supposed to be a summarised report of an interview with them on the object of their visit. In this interview it was stated that reference was made by the visitors to "starvation wages" as being paid in England. Now the firm of Lister and Co. do not pay starvation wages, and what is more, Messrs. Reixach and Watson never said that they did. In other words, this interview, like many others of its class, is an untruth. We have heard without concern of the sickening repetitions made by twopenny-halfpenny American politicians regarding the so-called pauper labour of Europe, but when persistent attacks are made on this country it is time to speak out. The lot of the average operative in this country at the present time is, we feel it safe to say, superior to that of his American brother. There is no more pauper labour in Great Britain than in the United States, and in no portion of the kingdom is there so much misery as that which prevails amongst the working population of Pennsylvania in the North, or even of the "Empire State" of Texas in the South.

THE AUSTRALIAN STRIKES.

It is clear that the strikes at the antipodes are approaching their close, and the result will be a disastrous defeat for the tyrannical forces of the unionists. This result will prove gratifying to every thoughtful man who is capable of seeing the drift of the modern trades-unionism, and the inevitable tendency of its principles. The tyranny of a Nero or a Caligula over the Roman Empire was a light affliction compared to that of a conquering and controlling band of the new unionists. The leaders of these men in effect declare that no working men have a right to live, except those that bend the knee in token of absolute subjection to the voluble but densely gnorant agitators who aspire to control the most vital interests of a country, namely, its ndustries and commerce. As far as lies in their power, and they would make it complete if they possibly could, they say that 'those who don't think as we do and associate themselves with us shall starve.' But even conformity to their views is not sufficient to ensure to labour the privilege of living, as they arrogate to themselves the right to say when the ranks of the labourers' occupation are full, after which the right to sell his labour is to be forbidden even to the worker who believes in trades-unionism as expounded by its new prophets. Working men, when they are giving their assent to such principles and rules as these, should not forget that those who will be shut out from the right to live and thus condemned to starvation will be their own children in the first instance, because it is well known that in the majority of cases the sons follow the occupations of the father in most of the pursuits that working men are engaged in. Was ever greater tyranny conceived by the notorious rulers of ancient Rome mentioned above? The negative answer may be most strongly urged. Great preparations are, it is stated, being made in this country for a renewal of the contest between the shipowners and the dockers and sailors, but it would be well if the two latter parties would pay some regard to the inevitable and rapidly nearing result of the great strike inaugurated by their confrères on the opposite side of the world. The noble stand the employers have there made in order to preserve freedom of contract, is deserving the commendation of all bodies of employers throughout the civilised world, and we should be glad to know that every association of capitalists had cabled to the Australian employers words of encouragement and, if need be, something much more tangible. Their victory will have an immense moral influence in this country, as it will shew that on their own chosen battle ground and under circumstances they cannot expect to equal in this country, the tyrannical demands formulated by the frothy leaders of the new unionism cannot be enforced. Violence and intimidation are, of course, well known and ancient weapons in connection with strikes, and we are not surprised to find that they have been resorted to in the Australasian disputes as well as in those of this country. The *Times* Melbourne correspondent, writing on September 23rd, gives the following description of some proceedings in Sydney in connection with the dispute there:

When the carters and wharf labourers left off work, free labourers offered their services in abundance. But no sooner had they begun work than they were cowed by the violence of the mob. Some of the non-union carters were maltreated in the streets; others were turned back by force and intimidation; and, in other cases still, the harness was taken off the backs of the horses and cut to pieces. For a day or two no free labourer could venture to drive a wool-dray from the railway station to the wharves. The Circular Quay, and the streets leading to it, were filled with an excited crowd, which rendered traffic impossible. Then the employers resolved to force the authorities into providing better protection, and for this purpose undertook themselves to drive the drays through the city. Among them were the largest wool-brokers, stalwart squatters from the "back blocks," managers of shipping companies, and one member of the Legislative Council, whose broad shoulders are as obstinately immovable as any that were ever seen in his native county of Dumfries. These were the men who determined to take the wool to the harbour. They were, perhaps, rather ostentatious in their manner of doing it, for the whole city of Sydney knew of their intention. Punctually at the appointed hour they started with their lorries, headed by a large contractor in whom propriety has not tamed the natural combativeness of the Celt, and guarded by mounted troopers and a strong detachment of special constables. To give new emphasis to their action they wore the usual city dress, and, with tall hats and frock coats, managed their teams in the most nonchalant fashion, smoking cigars all the while. All Sydney was agog to see the strange spectacle. The strikers yelled and boo-hooed in the streets; the public took possession of favourable windows and cheered. Road metal, rotten eggs, and other missiles were freely hurled at the unwonted drivers; but they went through the streets with the most undisturbed calmness. When they reached Circular Quay, where the crowd was most dense, an attack was made upon the lorries. Thereupon the Riot Act was read, the police charged the mob repeatedly, and the rioters, who had vainly imagined that the police would disobey orders and refuse to attack them, were filled with panic, and scurried out of danger in the best way they could.

On Tuesday great excitement occurred at Adelaide, owing to the unionists molesting the freemen. We wonder what such men would think if capitalists and non-striking workers turned round and maltreated all the unionists because they refused to work? They would be quite as much justified.

THE BRADFORD CHAMBER OF COMMERCE ON THE M'KINLEY BILL.

A report published in another column is interesting, if only for the views expressed by Sir Henry Mitchell, a speaker whose utterances on commercial questions are worthy of respect. Sir Henry is one of the few merchants who care about talking "shop" in public. There are numbers of others whose views would be quite as interesting, but one has to do without them. The circular issued by the United States Consuls, in which inquiries are made as to the probable effects of the McKinley Bill on the trade of this country, should be regarded with suspicion. To those who are in a position to give authoritative opinions on these subjects it is well known that the action of the authorities at Washington, in formulating such inquiries, has been instigated by a desire to secure campaign material for use in the next presidential election. Apart from this it is important to remember that European manufacturers are hardly likely to divulge their business secrets to such amateurs in economics as the heads of the Republican party. The circular issued by Mr. Blaine is tantamount in its impudence to the action of the man who treads on one's corns and then asks whether it hurts. Looking at the matter in this light, one views with satisfaction the action of several of our leading commercial men in declining to lay bare their inmost thoughts to the gaze of the inquisitive American investigator. This country has given hints enough to the outside world, and it is time we became a little more chary in informing Tom, Dick, and Harry how to get rich at our expense.

THE CALAIS STRIKE.

A conference between the delegates of the employers and those of the operatives took place on Thursday of last week, a crowd of 2,000 persons having gathered in the neighbourhood of the offices of the Union while the deliberations were in progress. The following engagement was finally come to between the two parties:—

Changing to be paid for at the rate of four francs per day of ten hours, and every day to be counted. The following processes shall be considered as changes:—

1. The preparation of a loom.
2. Changing of material, even if only partial.
3. The fixing of a new pattern demanding over a day's work, and requiring the presence of a workman.
4. Changing from one article to another.

Special indemnities will, in addition, be agreed to on the following basis:—

For less than 50 turns the passing of the warps will be paid as follows:—

10 francs up to 10 points inclusive, 15 francs up to 12 points inclusive, and 20 francs above 12 points.

Since the above proposals were made an agreement has been come to for the re-opening of the factories. From what can be learned at the time of writing, the strikers have secured a uniform tariff and the fixing of certain rules. Whether their position on the whole will be much improved or otherwise does not seem clear. A Reuter's telegram from Calais, dated Thursday, says:—"The majority of the lace workers on strike here quietly resumed work yesterday. The men employed in several small manufactories who did not take part in the strike demand that those of their employer

who did not pay the increased rate of wages secured by the late strikers shall be boycotted.' —"Evening. The new scale of wages drawn up by the representatives of the masters and operatives was finally signed this evening by the representatives of the masters and operatives respectively. The demands of the strikers have been acceded to in a large measure."

WEAVING AND MYTHOLOGY.

We borrow from a recent German essay the following brief summary of the evidence of mythology and legend as to the dignity of the art of weaving. Amongst the Greeks the deity of the smithy was only a demi-god, whereas the protectress of the textile art was Pallas Athene, one of the noblest figures in the Greek Pantheon, the embodiment of the divine thought. Amongst the Egyptians the goddess Neith, who was identical with the veiled image of Sais, and symbolised creative Nature, was associated with the loom. A piece of linen representing her in the act of weaving was found in a pyramid and brought by Th. Graf to Europe. The ancient Germans regarded Freia and Hulda as the patronesses of weaving. Before the commencement of the Christian era our great-great-grandmothers attained to considerable skill in the arts of weaving and embroidery, and when Christianity came up the good qualities of the dethroned goddesses were transferred to the Virgin Mary. As the most famous women of antiquity were famous for their skill in fine embroidery, it is not surprising that Mary is said to have woven costly fabrics. In the Protevangel of James it is asserted that she received gold and threads from the High Priest for the new veil of the Temple, and that then the angel brought her the annunciation in Nazareth. Many garments said to have belonged to the Saviour and to Mary are claimed to have been made by her.

Articles.

THE PROBABLE COURSE OF PRICES IN THE COTTON MARKET.

It is neither our province nor to our interest to advocate either a bull or bear view of the market, except so far as our opinion may be of use to our readers; but when we are forced from a careful reading of the market, omitting no factor which is known to influence it, to take a strong view, we feel it our duty to lay this before them. On the 20th September last, under the above heading, we wrote the opinion we had then formed, and in our weekly cotton reports since that time we have more than once emphasised the views then expressed. It may be well for cotton spinners to look back and see whether the circumstances and factors which were then likely to influence the market have changed; and, if so, to what extent, as the factor that has been the cause of a fall from then till now may well be the cause of a further giving way.

It will be remembered that in the article already referred to it was anticipated that a fall of at least ¼d. per lb. would take place. Middling American was quoted on that day 5⅛d., it is now, at the time of writing, 5 1/16d., or ¼d. down.

Futures, in winter positions, were 5·39d.; they have since touched 5·27, or 12 points down, which was the lowest point touched last year, which was on October 23rd. Now, the favourable fact of this season is that no killing frost, which might have affected the extent of the crop, has yet come, and, as we have now reached November, any frost that may now come will be no very great disadvantage to it, so that the extent of the present crop is not likely to be adversely affected thereby. On the other hand, since 20th September, we have received reports of heavy rains, which have undoubtedly damaged the *quality* of that portion of the crop picked during September and early October, although, with improved weather since then, the quality of the cotton now being picked may not be so injuriously affected. Two factors, therefore, of prime importance have not militated against the *quantity*, although one will have done so as far as the *quality* is concerned. Another important matter calling for consideration is that nothwithstanding the large orders that have been put through on behalf of the trade since we last wrote, prices have *declined*; this action we thought might have steadied the market, but the result shews that it was even weaker than we gave it credit for. Possibly the fact that those spinners to whom we referred as having bought all along the line, and who are reported to have resold all they bought and some more besides, may have helped to weaken the market. But putting such influences as this on one side, the chief thing to regard is the depressing effect which the weight of cotton already brought to light and the large quantity looming in the distance must have upon prices.

The receipts last week reached 313,000, against 314,000 in the same week of 1889, which was the largest weekly figure ever attained; the pointers this week indicate a total of 320,000 bales, which if realised will beat the record.

If spinners will reflect for a moment and bear in mind that the trade had in stock on the 30th September last over 130,000 bales of American, the quality of which was 3 per cent. better than the average quality of previous crops, and will look at the weekly takings of the trade since that date, they will easily calculate that spinners at the present time hold enough Amercian cotton to keep them going for three weeks or a month without buying another bale, and this, be it observed, on the 1st November! With this in hand, and with a crop of at least 7,500,000 in prospect, and with no "corner" in the distance, there will be no scarcity of cotton and no necessity for spinners to rush into the market even at these prices, which many are tempted to do, for although 5⅝d. for Middling seems a very low price, when we approach to nearer 5¼d. than 5 1/16d., which we shall most probably do, present quotations will not look very cheap after all. We can only repeat the advice we gave before —viz., to buy hand-to-mouth till gradual deliveries can be bought on the basis of 5¼d. to 5⅜d. for futures. As, however, the winter positions are now quoted 5·27d. it will be wise for spinners to pick up cotton of their quality equal to sealed samples for *gradual delivery* during the winter months. Let them, if anything, err on the right side by buying a grade better than their usual quality), repeating the purchase for the spring months, and again for the summer and autumn months of 1891, whenever the prices of futures for those positions recede to 5·32, but only buying, say, half their consumption for gradual delivery, leaving themselves open to pick up as opportunities offer cheap lots on the spot, to either help up or let down as the case may be, the cottons which will be tendered against their gradual delivery contracts.

We shall not be surprised to see a sharp temporary rise on the first reliable report of frost, as sentiment often affects prices more than figures, but unless the frost curtails the *volume* of the crop, and it is less probable it will do so every day that passes without frost, the weight of it must eventually tell upon prices, which, we think, will rule in the region of 5¼d. for a time at least. At the same time it should not be forgotten that there is now so good a margin for spinners, that perhaps it will be well not to grasp too keenly for their pound of flesh from cotton. By buying as here suggested, although they may not get in all they want at the "rock bottom," their average cost will not be far from it.

THE FALSE PACKING OF EAST INDIA COTTON.

We have several times directed attention to the false packing of Indian cotton, the loss that has fallen upon consumers, and the injury thereby done to the trade of our dependency in honestly packed cotton. Seeing the course that the Americans are taking, we shall not be surprised if at some not remote date they prohibit the exportation of cotton in order that they may manufacture it in the States, and that having thus secured a monopoly of the raw material, they may also acquire a monopoly of the trade in cotton goods. With this by no means impossible contingency of the future, it is very desirable that all the business in cotton that we can possibly transfer to India and our other dependencies and colonies, should be so transferred, to our and their advantage. But merchants and dealers who handle falsely-packed cotton are helping to degrade the reputation of the country producing it, and so helping to prevent, or greatly retard, the accomplishment of such a beneficial intention. Whoever first discovers falsely-packed cotton should make a point of returning the same to those from whom it has been received. Such cotton should, indeed, be sternly boycotted and rendered unsaleable, which drastic treatment would soon put a stop to the practice. As the outcome of representations made by numerous spinners who have had occasion to find fault in this respect, the Liverpool Cotton Association, Limited, in July last, appointed a special committee to investigate the charges brought forward and to consider the best means that could be adopted to cure the evil. The committee consisted of three spinners, four Bombay merchants, and seven cotton brokers. Several meetings have been held, and the committee has just formulated its report, which mainly consists of the following resolutions:—

That this committee recommends the association to make the following changes and additions to the bye-laws relating to East Indian cotton:—

1. That in the bye-laws relating to the sampling of East Indian cotton in place of clause 2 the following be substituted (first paragraph of clause 3 to remain unaltered):—

> "East Indian cotton shall in all cases be sampled as follows:—One hoop to be removed and samples (outsides having been picked off) drawn in equal quantities from both sides and the middle of either end of the bale.
>
> "N.B.—This examination shall not invalidate any subsequent claim for false-packing which was not shewn in the samples laid before arbitrators." (This N.B. to apply also to clause 3, passed 23rd June, 1890.)

2. That in addition to the existing provisions relating to the mode of sampling it shall be at the option of the buyer or seller to remove all the hoops and draw samples from any part of 3 per centum of the bales.

3. That all the samples drawn shall be used for determining questions either of false-packing or quality, but due allowance shall be made for the

change in the appearance of the hard side of the bale by the cross-packing.

4. That in all arrival contracts the time allowed for the return of false-packed and unmerchantable cotton be extended to 12 months.

5. That where arrival cotton is returned for false-packing the arbitrators may, at their discretion, inflict a penalty not exceeding ¼d. per lb.

6. That in spot transactions, notwithstanding the fact that the worst part of the bales may have been shewn in the selling samples, it shall not free the seller from liability for false-packing, unless "No rejection for mixture in the bale" shall have been written on the sample ticket.

7. That the following alteration in the bye-law referring to the rejection of cotton containing 10 per cent. or more of false-packed bales (Clause 3 in Bye-laws relating to East Indian Cotton) be adopted :—

After the words "shall have the option."

"Of invoicing back the lot if bought on C.I.F. or C.F. terms (within the time allowed by the contract for the return of false-packs), providing the cotton has not left Liverpool, in which case the actual false-packed bales only shall be returned;" or

"Of invoicing back the lot if bought on Liverpool arrival or delivery terms, providing delivery has not been taken, in which case the actual false-packed bales only shall be returned;" or

"Of cancelling the contract if bought on spot terms, providing delivery has not been taken, in which case the actual false-packed bales only shall be returned."

It will be observed that the principal points in these recommendations are, as summarised by the chairman, four :—

1.—A more thorough examination of the cotton, including not only the sampling of every bale in three places, if desired, as provided in existing bye-laws, but also the opening-out of 3 per cent. of the number of bales under examination.

We really see no reason why the number of bales that might be opened out should not be increased, if the buyer has any reason to suspect the lot.

2.—The bringing into arbitrations on quality of samples drawn from the hard side—subject to the proviso named in the resolution.

This is hardly sufficiently strong. It is difficult to adequately represent a large quantity of such a material as cotton by a sample. These are only drawn as an approximate guide, and if they should prove delusive, why should not the evidence demonstrating this be placed before the court, from whatever source it may be obtained?

3.—The extension of the time for making claims to (12) twelve months.

The conditions of the trade certainly require this provision, as well as the following :—

4.—The power given to arbitrators to award a penalty not exceeding ¼d. per lb.

This penalty should be *plus* any loss that may arise from changes of prices or interruptions of business arising from inability to use the cotton at the time required.

The Chairman of the Committee observes that "These recommendations (especially the extension of time for claiming to twelve months) may seem severe, but the Committee wished to point out that they have been impressed with the necessity of framing recommendations stringent enough to induce all connected with the moving of the East Indian crop to adopt such safeguards as will effectually prevent the recurrence of the widespread system of false-packing which has prevailed this last season, and which has done so much to injure the sale of even the honestly-packed cotton." These are sentiments with which all conscientious men will agree.

It is reported in Calais that by a Franco-Greek Convention French laces entering Greece will be admitted at a tariff reduction of 30 per cent., as compared with the rates charged on imports from other nations, including Great Britain.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

APPRAISING VALUES OF IMPORTS.—A CARD CLOTHING SYNDICATE.—EXHIBITION OF LOOMS.—TARIFF HUMOUR.—MISCELLANEOUS.

NEW YORK, OCT. 18TH.

The re-appraisements of value made during the week ending September 27th by the United States General Appraisers are significant. The particulars furnished by the secretary of the Treasury shew that German and French manufacturers have come in for the chief share of attention, and that British firms have given as correct returns as is possible. The Germans have all along been the greatest sinners in this matter of undervaluation, and the list sent from Washington this week contains at its head the following charming illustration of their methods :—

Decorated china vases, from A. Goldschmidt, München ; average advance, 52·3 per cent.

M. Antonie Rahaim, of Paris, has had a consignment of beads advanced 25·5 per cent. The other changes are not so great. Their character will be shewn by the following extracts from the Treasury list :—

23½-inch satin, from B. E. Kerstiens and Co. Crefeld.

Quality A, advanced from ·70 marks per aune (elle) to ·76 marks.

Quality B, advanced from 72½ marks per aune to ·79½ marks.

Quality K, advanced from ·75 marks per aune to ·83 marks.

Quality H, advanced from ·77½ marks per aune to 84½ marks.

Quality C, advanced from ·80 marks per aune to ·97 marks.

Quality E, advanced from 97 marks per aune to 1·06 marks.

Quality D, advanced from 1·05 marks per aune to 1·15 marks.

16½-inch black velvet, from I. Kridel, Crefeld.

Quality L, advanced from 1·04 marks per metre to 1·13 marks.

Quality N, advanced from 1·14 marks per metre to 1·30 marks.

Some plushes from Huddersfield and a few Scotch-wool noils from Liverpool are the only items which have been interfered with. The advances made were in the one case from 10s. to 10s. 6d. a yard; in the other from 6d. to 6½d. per lb. Vexatious increases surely! At any rate the English shippers will not be credited with motives similar to those which appear to have actuated some of the German houses referred to above.

The American Card Clothing Co., which is a combination of all the manufacturers of card clothing in the United States, has announced a reduction in prices. The following is a copy of the circular issued on the subject :—

Worcester, Mass., Sept. 25, 1890.

By forming a Corporation and lessening cost of manufacture, we are pleased to inform you that we are enabled to reduce the price of Card Clothing.

We hope you will continue to favour us with your esteemed orders, which will receive prompt attention, whether sent to any of our Agents as below (who will give their personal attention to the same as heretofore), or at the Main Office, at Worcester, Mass.

We have secured all the most valuable patents on Cloth and Needle Point, and also the most recent improvements in Card Setting and Grinding Machinery. Correspondence solicited.

There has been an increase in the duty on the tempered steel wire and fillets used in making card clothing, and friends of the combination, in view of the above announcement, are making much of the consideration shewn for the interests of manufacturers. It is hardly likely, however, that the latter will continue to experience such benevolence on the part of the combination. Syndicates, like corporations, have no souls.

An exhibition of looms was made at the Pawtucket celebration by the Knowles Loom Works. The looms were running at 115 picks on ginghams, one four, and the other seven shuttle work. The four-shuttle loom was weaving a pattern of 320 picks, and using 68 bars of chain. On certain patterns this could be reduced still more. On this loom the chain is 68, and without their patent multiplier it would require 320 bars, or a chain reaching to the ceiling. If this pattern would divide to the best advantage for the number of picks, the pattern could be reduced to 8 bars of chain. The seven-shuttle loom is a pattern of 276 picks, using only 56 bars of chain. These looms are equipped with new face friction pulley, centre stop motion and brake motion, which, it is claimed, stops the loom so quickly that there is no "finding the pick," nor losing the place on the box chain. All that is necessary for the weaver to do is to release the brake, push the lay back, throw the shuttle through the shed, and start the loom.

Amongst the lighter specimens of tariff literature, the following has lately been making the rounds :—"Clams (a species of shell-fish) is up, missus," said a coloured pedlar down town to a housewife who asked why, and was told "it must be dis tarf business." "I didn't know there was any tariff on clams," said the woman, on a venture—for she hadn't read the tariff bill all through. "Well, you see, it's dis way," explained the pedlar, confidentially, "it's done been put on odder tings, and us poor folks hab got to live, too, as well as de tarfs."

Mr. J. C. Todd, Paterson, N.J., is completing one of the largest and best equipped machine shops for making textile machinery, and especially for flax and linen, in the United States. It is to replace the one recently burned.

It is reported that an English syndicate has purchased the following Rhode Island woollen mills :—The Lymansville mills, located at North Providence, and provided with 14 sets of cards and 60 hand looms, manufacturing worsted suitings; the Harrisville mills, owned by William Tinkham and Co., manufacturing fancy worsteds, using 10 sets of cards, 128 broad and two narrow looms; the mills of H. A. Kimball, situated at Manton, and furnished with seven sets of cards and 126 broad looms.

The Burlington Cotton Mills, Burlington, Vt., are getting in six more Platt Cards and other machinery.

Letters from our Readers.

The Editor does not necessarily endorse the opinions of his correspondents.

THE INDIA FACTORY COMMISSION AND THE BERLIN LABOUR CONFERENCE.

(TO THE EDITOR OF *The Textile Mercury.*)

SIR,—It is highly important that the amendment to the India Factory Act should be laid upon the table of the House of Commons and duly debated before it receives the sanction of the Secretary of State for India. Notwithstanding Lord Cross's promise, as stated in the House by Sir John Gorst on the 14th of August, that "the principles affirmed at the Berlin Conference are being and will be observed in India," the points upon which the Government of India has instructed the lately-appointed Factory Commission to report shew clearly in their wording that the Government of India has not the slightest intention to carry out the promise of the Secretary of State.

Speaking on the question of the age at which children should be allowed to commence work, Sir John Gorst, in the name of the British Delegation to the Conference at Berlin, stated as follows :—

"The delegates of Great Britain are of opinion that the conference should not take on itself the responsibility of admitting that the limit of age for the work of children in Southern countries be fixed at ten years. The limit of 12 years has been generally adopted by the conference in consideration of the demands of physical, moral, and intellectual development of the children."

According to the regulations sanctioned by the conference, children below 14 years complete, were not to be employed at night nor on Sundays, nor for more than six hours a day; and young persons above the age of 14 were not to work more than 10

hours a day, their work hours should be broken by a rest of at least an hour and a half, and they should neither be allowed to work at night nor on Sundays. Among the points the Factory Commission is to report upon is the following :—

"Should the law draw a distinction between young persons and adults, and, if so, the age of a child being fixed at from nine to 12, what should be the definition of a young person, and what should be the hours of employment of this class?"

Instead of fixing the age for the employment of children as between 12 and 14, the Government of India has already evidently resolved to fix the age as between nine and 12, and to work those classed as children by our delegates at Berlin either as long as young persons or as long as adults. The promises of the Secretary of State for India will evidently not be performed by the Government of India unless the India Factory Act, as amended, is laid before Parliament.—I am, sir, your obedient servant,

HOLT S. HALLETT.

Brighton, Oct. 24th.

QUERIES, ETC.

EMBROIDERY or "SPRIGGING" MACHINE.—Sir,—Can you or any of your readers inform me who makes machines for embroidering with silk or other yarns, figures, spots, or sprays, on light gossamer goods, such as silk gauzes, etc. R. DANIEL.

ANSWERS TO CORRESPONDENTS.

R. DANIEL (E——).—We insert your query. Our impression is that the machine is made at both Plauen in Saxony, and St. Galle in Switzerland, but we have not the name of any maker at the moment.

J. and E. A. (Stockport). It would be inadvisable to take the course you suggest. A better plan would be to have yours described.

J. H. (Newtown).—Your query, *re* the duties of inspectors, was substantially answered in our article of last week. What about your successful essay at the Eisteddfod; has it been published?

L. W. S. (Nottingham).—We have no room at present for additions to our staff of contributors, but will keep your name before us.

NOSMIT (Nottingham).—There is no book published on the cleaning of cotton and woollen cloths.

Designing.

THE McKINLEY TARIFF.

In continuing our remarks on the above subject, full of interest and meaning as it is to all engaged in the textile trades, we offer no apology for a seeming digression from our ordinary routine, since we cannot but feel that opportunities like the present should enable designers to fully utilise the meaning of their work, the conditions to be fulfilled, and the manner of accomplishing the same.

The commercial supremacy of certain countries has so long been an acknowledged fact, these countries have so long had the monopoly of trade for their less civilised or less energetic neighbours, that the McKinley Bill came as a surprise, or rather as an awakening, and we are suddenly confronted with the question, "How far will this principle of home co-operation extend? What does it really imply?" McKinley's Bill undoubtedly occupies a unique position; it is a blow at world-wide co-operation, while at the same time it favours national co-operation. Thinking the matter over from the basis of world-wide co-operation results at the present time in more or less confusion. Take it for granted that co-operation, meaning by this the allotment of certain work to certain classes, means a saving of, say even 50 per cent., such percentage must be largely reduced by the necessity for providing means of conveyance, etc.; for example, an extensive railway system is mainly the result of co-operative production, so is our shipping trade, nay, even our engineering trade. Thus it is very evident that placing one thing against another co-operative production must eventually confine itself to fixed areas; these areas have so far been demarked by civilisation, combined with the natural capabilities of nations. In the future we may expect such demarkation to depend more upon natural advantages in unison with more complete co-operation, though for the present and for some time to come the limitation of areas for the distribution of co-operative production must remain open to practical experiment.

America undoubtedly has not at present the talent which England has in a maximum degree. Her endeavour is to obtain the service of capital in the form of English designers and manufacturers which shall raise the capabilities of her people up to those of England, and she may succeed and, of course, will succeed eventually to a greater or less extent, but at the same time we must remember that the nation is paying for it. America cannot, in co-operating with herself at present, produce her cloth at so cheap a rate as she can while co-operating with England, for the reason that England has at present both natural and artificial advantages, combined with superior capabilities.

America, then, is trying whether she cannot overcome all or most of these and make an area of co-operation for herself, and we must abide by the result.

In the meantime the principle here demonstrated is perhaps equally applicable to ourselves. We must endeavour, if possible, to extend our area of co-operation in directions yet unoccupied, and also to occupy more completely that area which naturally we are by far the most able of any nation to occupy.

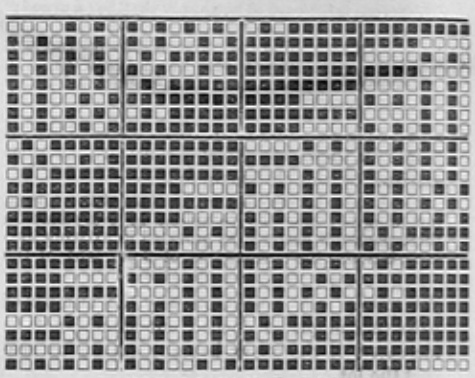
Respecting the first-mentioned endeavour, this lies with our merchants; the latter lies with our designers, manufacturers, and also our legislators, for the colonies must here claim a place alongside our own country.

Thus logically are we again brought face to face with the difficulties to be overcome and the means of extending our trade, which last week we more or less assumed.

The importance then of attending to the intellectual development of our people cannot be overrated, neither can that physical development without which intellect must be at a greater or less discount. In the future we will endeavour to bring the importance of this more fully home to our readers; in the meantime we proceed to furnish suggestions which we trust will be of some service to our designers and manufacturers.

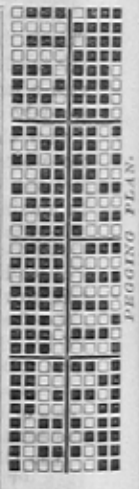
NEW FANCY DIAGONAL FOR COTTON, LINEN, AND SILK DRESS GOODS.

Now that winter, with its attendant frosts, foggy seasons, and damp thaws is approaching, what to wear in the house is a leading topic of conversation amongst ladies of all stations. To be well and neatly attired for outdoor exercise, for a reception, a ball, a dinner, or a concert, is really much easier than to appear at all times becomingly dressed in the house. Tight-fitting or tailor-made bodices are as unbecoming indoors as they are the reverse for outdoor wear. The woman whose dress is *négligé* without being untidy, and who selects patterns of the most suitable tints and styles, will always look more at home than one whose dress is in the very height of fashion. A dark shade of blue having a tinge of electric blue in it will accordingly, by all accounts, be the popular taste for indoor wear, and lighter shades of it for evening dress. A variety for tea or dinner gowns is ripe corn, pale-green silk or velvet; other shades will obtain in forest green, chamois, vieux rose, brown, mignonette; green

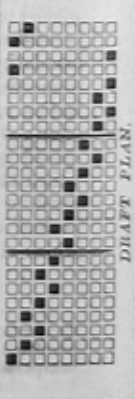


FANCY DIAGONAL DESIGN.

FIGURE 98.



SPRIGGING PLAN.



DRAFT PLAN.

four-end twill, darker green and very light terra-cotta. The diagonal design herewith is original. On 8 shafts, 24 end draft, 32 to the round (see pegging plan and draft), 72 reed, 2 in a heald, one heald per dent, or 72 ends per inch, 54 inches wide, 24's twist warp, 12's weft. 72 picks per inch, warp all bleached white. Weft dark shades of all the fashionable colours; warp may be cream, or any other light tint that will contrast well with the weft. The weft may be any of the lighter tints, and the warp dark shades; it is immaterial, as no mistake can be made if the contrast be kept up. The diagonal is designed to suit warp and weft, all grey, and piece-dyed in any colour, shade, or tint. It may be a bleached cloth, well finished, or a linen finish given to it. If made in silk or linen it would give as great satisfaction as in cotton, if proper and sufficient materials are used. A fine bold diagonal, with a most striking and peculiar effect, with a beauty and uniformity not always observable in diagonals, it is well worth a trial, and as we have said, if properly made, would be a success.

FIGURED MANTLE OR DRESS CLOTHS.

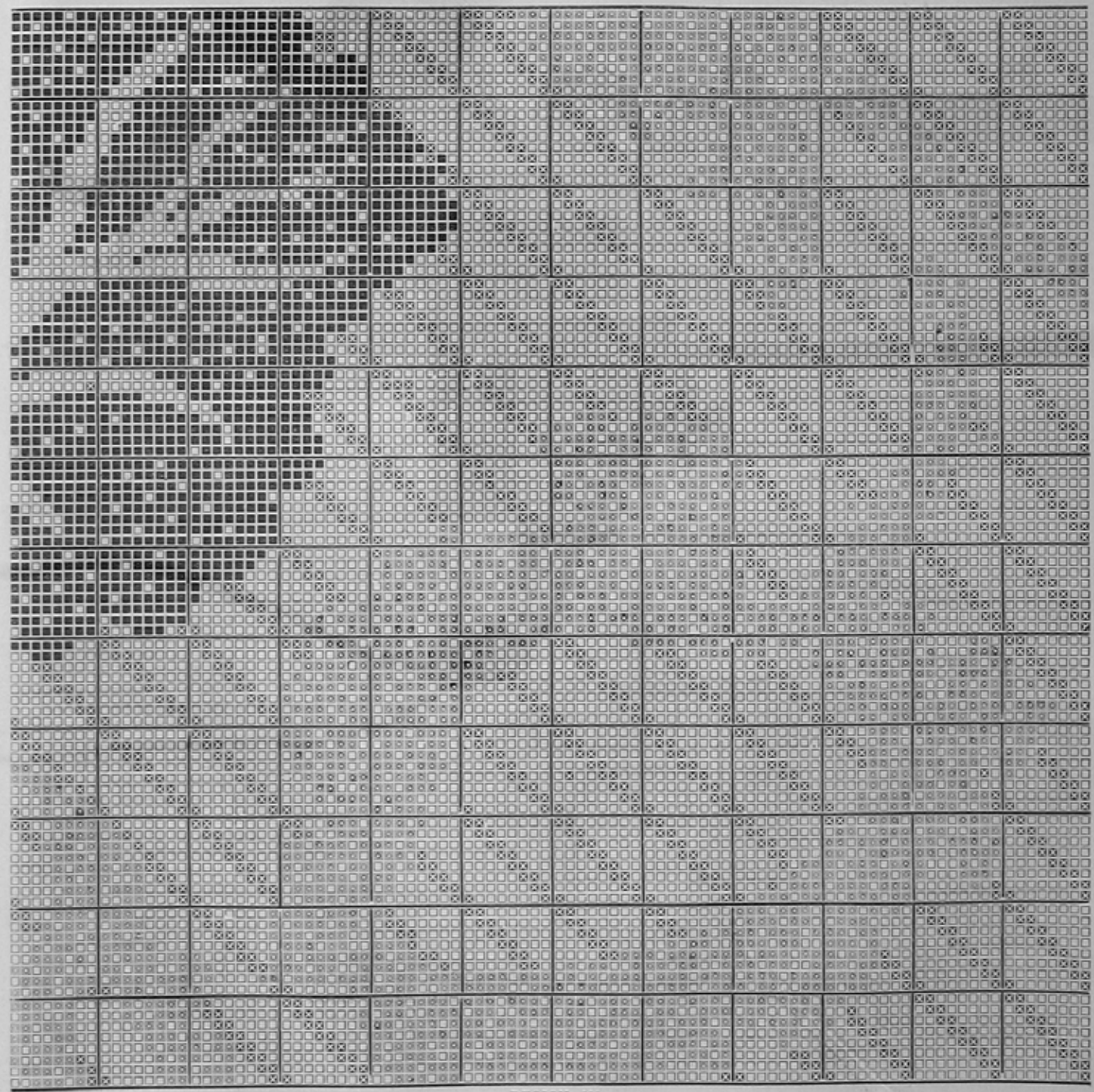
Though some particulars were supplied of sett etc., for last week's pattern, there is ample room for many suggestions for novel development. Of late many experiments have been tried with worsted yarns, curious kinds of twists, etc., being formed, and though these, save in very few cases, have been of no practical use, we cannot but think that it is the fault of the designer, which fault in our opinion lies in the failure between coincidence in colour and the character of the yarn.

All designers know the use of blending colours well together either in the yarn or in the cloth, but few realise this as they ought. As this principle of beautification becomes better known, every available method of blending will come under notice, and undoubtedly some very beautiful effects will be formed.

We would suggest the following principle of colouring *Figure 27*:—Ground to be a blend of a dark and medium colour which shall be at least partially complementary to one another, such as dark blue and yellow or orange, red and dark green. For the figure we would suggest the complementary colour to the ground blended with a smaller proportion of the ground colour, so that though sufficient difference between ground and figure is observable, yet this difference should not be such as to overpower the weave effect, which we have indicated in *Design 192*.

Fancy yarns shewing up brilliantly the colours toned down as indicated, could here be introduced with effect, but they should be introduced as part of the design, such as for portions of stems, etc., not haphazard.

In *Figure 28* we supply another application of a natural form. In *Design 193* a system of development is indicated which shall claim our attention next week.



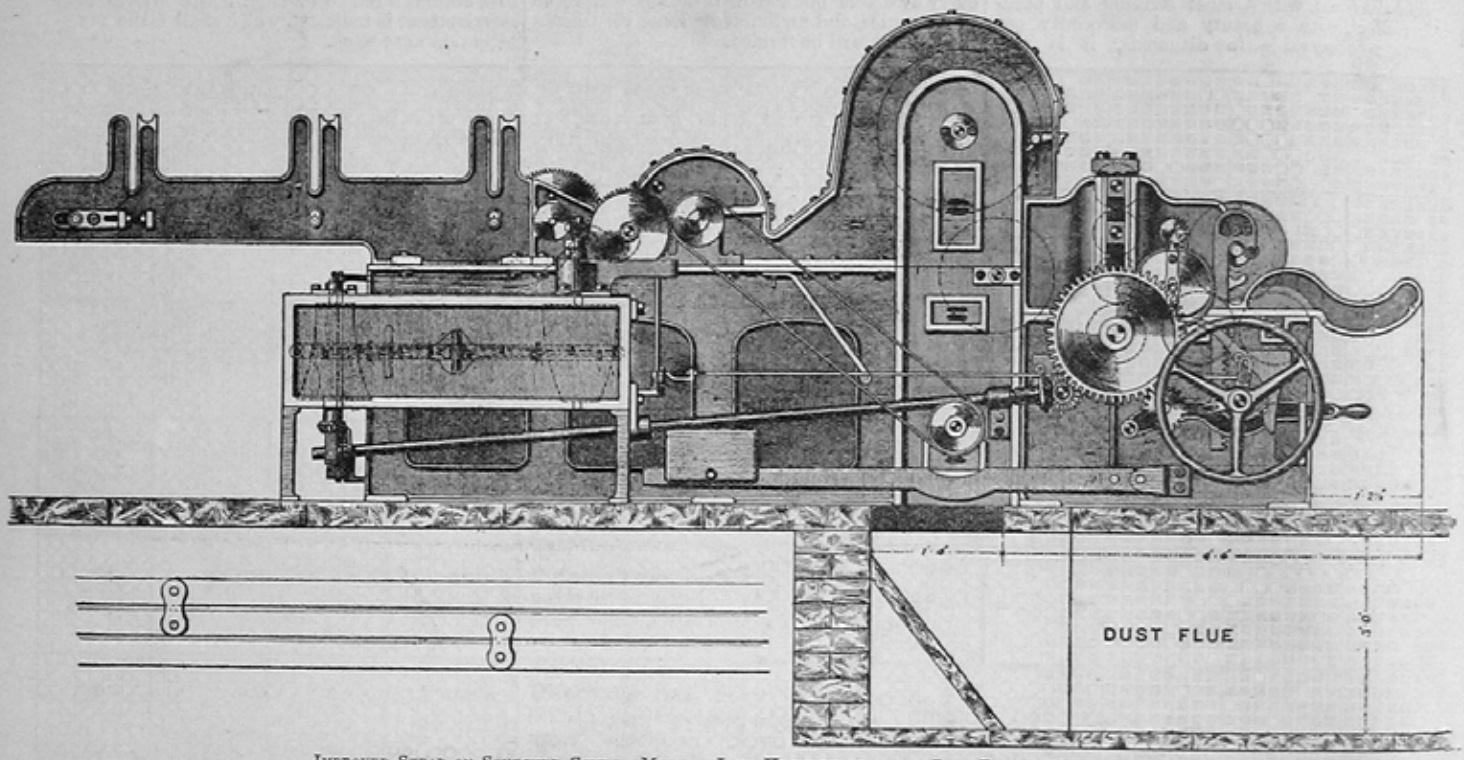
DESIGN 193.

Machinery and Appliances.

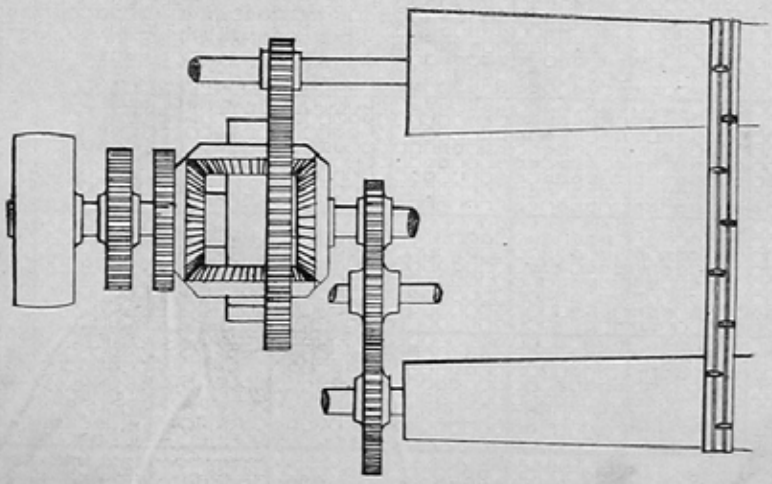
IMPROVED DRIVING STRAP FOR CONE DRIVING.

MESSRS. JOHN HETHERINGTON AND SONS, LIMITED, POLLARD STREET, MANCHESTER.

The necessity of obtaining variable speeds in some classes of machinery in the cotton trade, such as scutchers, slubbers, intermediates, and finishers for jack frames, and corresponding machines in the other textile industries where the like requirement exists, has led to the adoption of cone pulleys with a traversing strap for driving parts of the machines just named. In the flax and jute trades the friction disc has been put into requisition for the same purpose. It is, however, with the former that we are at present concerned. Driving by cones has long been regarded as unsatisfactory, whether their arrangement has been vertical or horizontal. This arises from the fact that the strap by which the connection is established between them cannot easily be made to depart from its parallel attitude. On both cones, therefore, it grips most strongly the largest diameter with which it is in contact, and as on the driving cone this gripping position is opposite to that on the driven one, it becomes obvious that the driving is bound to be very faulty because of the great liability of the strap to slip, and the actual occurrence of slipping. For all practical purposes, and especially in scutcher cones, not much more than one-half to two-thirds of the width of the belt is really available for work. This may be easily tested by inspection of the belts in their working position, when it will be found that between the edge of the strap towards the smaller diameter of the cone, and the periphery of the cone at the same side of the strap, there is a clear space which will admit of the insertion of anything wedge-shaped up to almost half the width of the strap, especially when the cone tapers quickly. It will be clear, therefore, that no useful work is performed by either strap or cone, so far as they are separated. Assuming that this is the state of matters on the driving cone, which has been inspected and found as described, the driven cone should be examined, when a precisely similar condition will be found, with the difference only that the contact will be on the opposite side of the strap. This, it may be incidentally observed, shews that the strain of transmitting the power between the two cones coincides with a line drawn from a point on the edge of the strap upon the largest diameter of the driving cone to another upon the opposite edge of the strap upon the largest diameter of the driven cone. The severest labour thus devolves upon the edges of the strap, and this accounts for the rapid wear and tear of belts used for this purpose, which is abnormally great, owing to having to be worked in a very tense condition to get them to drive with any degree of satisfaction.



IMPROVED STRAP ON SCUTCHER CONES.—MESSRS. JOHN HETHERINGTON AND SONS, LIMITED, MANCHESTER.



IMPROVED STRAP ON FRAME CONES.

All these difficulties arise from the fact that the strap fails to properly adjust itself to the surfaces of the cones, owing to its comparative inflexibility in the direction of its width. This has been observed, and as the knowledge of the source of an evil is one-half the cure, the latter has not been long in forthcoming. Mr. John McQueen, of Messrs. John Hetherington and Sons, Limited, and Mr. Moore, manager of one of the departments in the establishment of that firm, have devised the improved driving strap described and illustrated herewith. The new strap is composed of two, three, or more sections, according to its width. These are attached to each other by links at about $\frac{1}{4}$th inch from each other, so that links can be permitted to swivel in either direction as the strap adjusts itself to the cone surfaces. Thus perfect flexibility in the direction of the width

of the strap is obtained, and this brings about the much-desired contact between the driving face of the strap and the periphery of the cone. The results are—much more even driving from a slacker strap, less wear and tear, the requirement of less power, and, above all, much better work. With the new belt greater regularity of work is shewn in the scutching, the advantage of which will make itself felt in every subsequent process. Corresponding or even greater advantages will arise from its use upon the slubbing, intermediate, and roving frames, the outcome of all being an improvement in both quantity and quality of work. Our illustrations shew it as applied to the vertical cones of the scutcher and the horizontal cones of the frames.

Parties desirous of further information, of examining the belts, or of seeing them at work, may apply to Messrs. John Hetherington and Sons, Limited, as above.

Bleaching, Dyeing, Printing, etc.

THE COAL-TAR COLOURING MATTERS.

III.

THE AZO-COLOURING MATTERS.—*(Continued.)*

3RD.—THE TETRAZO COLOURING MATTERS.

At the beginning of 1885 there was placed on the market the first representative of a new class of azo-colouring matters, viz., Congo red. This class has since then become very numerous, and promises in time to include a large number of very useful products. The special feature which distinguishes the group from other azo colours is their capacity for dyeing the cotton fibre full, solid, bright shades, fast to washing, from a simple soap bath.

Now all the colouring matters of this class contain two azo groups—N : N—but unlike the disazo colours just noted these are derived from a single diamine, whereas the azo groups in the disazo colours are derived from two monoamines. The largest number of these colouring matters are derived from three diamine bases :

Benzidine $\begin{cases} C_6H_4NH_2 \\ C_6H_4NH_2 \end{cases}$

tolidine $\begin{cases} C_6H_3CH_3NH_2 \\ C_6H_3CH_3NH_2 \end{cases}$ and stilbene $\begin{matrix} CHC_6H_4NH_2 \\ \| \\ CHC_6H_4NH_2 \end{matrix}$

diamine, the latter being, however, mostly used in the form of its disulphonic acid. These bodies on being azotised are converted into what are generally called tetrazo derivatives; thus benzidine gives tetrazodiphenyl.

$$\begin{cases} C_6H_4N:N-, \\ C_6H_4N:N-, \end{cases}$$

tolidine gives tetrazo ditolyl—

$$\begin{cases} C_6H_3CH_3N:N- \\ C_6H_3CH_3N:N- \end{cases}$$

and stilbene disulphonic acid gives tetrazo still bene disulphonic acid.

$$\begin{matrix} CHC_6H_2HSO_3N:N- \\ \| \\ CHC_6H_2HSO_3N:N- \end{matrix}$$

It is rather erroneous to call these tetrazo bodies, but it is done to distinguish them from the diazo and disazo bodies. On combining these tetrazo bodies with phenol or salicylic acid yellow colouring matters are obtained, such as chrysamine, Congo yellow, titan yellow, Hessian yellow, chrysophenine. These are very fast to light and moderately so to acids: they are nearly all reddened by alkalies, and some only are turned orange on soaping. They are best dyed in a bath containing salt, or with a little good neutral soap and phosphate of soda, and they dye all fibres equally well.

The tetrazo bodies can also combine with naphthol, and its sulphonic acids when blue colours are obtained, such as azo blue, the benzoazurines, diamine blue, etc. These yield blues which are fairly fast to light and acids and stand washing. Alkalies usually redden them.

They dye cotton best in a neutral soap bath. As a rule they do not work well on wool or silk, and the shades obtained on these fibres are, as a rule, very much redder than those obtained on cotton.

The tetrazo bodies can also combine with napthylamine and its sulphonic acids, when brilliant reds are obtained, such as Congo reds, benzopurpurines, diamine reds, roseazurines, deltapurpurines. These generally give shades on cotton nearly resembling Turkey red, etc., and best from an alkaline soap bath ; they are nearly all sensitive to acids, being turned blue thereby, although there are considerable differences among them in this respect ; they stand washing and alkalies, but not light ; some do not stand exposure to light.

From the formula of a few representative members of this class of colouring matters the general composition will be seen.

Chrysamine $\begin{matrix} C_6H_4N:NC_6H_3OHCOONa \\ C_6H_4N:NC_6H_3OHCOONa \end{matrix}$

Benzopurpurine $\begin{matrix} C_6H_3CH_3N:NC_{12}H_5NH_2SO_3Na \\ C_6H_3CH_3N:NC_{12}H_5NH_2SO_3Na \end{matrix}$

Azo Blue $\begin{matrix} C_6H_3CH_3N:NC_{12}H_5OHSO_3Na \\ C_6H_3CH_3N:NC_{12}H_5OHSO_3Na \end{matrix}$

Chrysophenin $\begin{matrix} CHC_6H_2NaSO_3N:NC_6H_4OC_2H_5 \\ \| \\ CHC_6H_2NaSO_3N:NC_6H_4OC_2H_5 \end{matrix}$

Congo Corinth $\begin{cases} C_6H_4N:NC_{10}H_5OHSO_3Na \\ C_6H_4N:NC_{10}H_5NH_2SO_3Na \end{cases}$

The introduction of these colouring matters has caused almost a little revolution in the methods of cotton dyeing. They have been used to a very large extent and have made a place of their own in dyeing processes, having proved a great boon to dyers of mixed fabrics, of silk and cotton, and wool and cotton, enabling them to dye both fibres in one bath easily and well of the same shade—a matter very difficult of achievement with other colouring matters.

The general method of application has been indicated above. It may be worth while to specify more particularly the method usually followed in dyeing with these coolours. The dye bath is made with the required quantity of colouring matter, 10 per cent. of soda or potash, or 10 to 20 per cent of salt, or 10 per cent. of phosphate of soda, with or without the addition of 2½ per cent. of soap, as may be required for the particular colours. The temperature of the bath is raised to the boil, the steam turned off, and the wet-out goods entered and left in for an hour. The dye bath is not exhausted, and can be kept for further use, it being only necessary to add for the second and future baths one-half the quantity of materials used at first. These baths may be worked for months without there being any necessity to throw them away.

(To be continued).

THE DYEING OF HALF-SILK (SATIN) RIBBONS.

Owing to the fact that with the older colours it is impossible by the same process and materials to dye silk and cotton of an even shade, it was usual to dye the fibres in the yarn, and to weave the dyed yarns. This is not the best plan to adopt, chiefly for the reason that in weaving the ribbons accidents may arise and the ribbons become dirtied and stained by grease, etc., and as the scouring necessary to remove this dirt and grease will act differently on the two dyed fibres, it may remove more colour from one than from the other, alter the shade of one and not the other, and so on—a result by no means desirable, as it would practically spoil the goods. Of late years the use of the coal-tar colours has enabled mixed silk and cotton goods after weaving to be dyed of uniform and level shades ; more especially is this the case since the introduction of the benzidine dyes, many of which are capable of dyeing both fibres from one bath very uniform shades.

For dyeing these goods the best form of vat to use would be a rectangular wooden vat fitted with a roller at each end on which the ribbons can be wound alternately. In the vat itself a number of guide rollers are arranged alternately at top and bottom, and over these the ribbons are passed, so that in being wound from one winding-roller to the other, they pass through a good deal of dye liquor. The ribbons should be in fairly long lengths, say from 100 to 120 yards, and several may be passed through at one time. It is, however, advisable not to crowd the rollers too much, but rather to leave plenty of room between each length of ribbon.

Arrangements should be made for heating the dye vat. This is preferably done by means of a steam coil at the bottom of the vat, above which a perforated plate is placed to distribute the heat more uniformly through the dye vat. When in use the ribbons are wound slowly from one winding-roller to the other ; this is done alternately until they have become properly dyed. As sometimes the ribbons are treated to a series of operations, and it is a great trouble to change them from one vat to another, it is advisable to arrange means to empty the vat, and to run in other wash waters and dye liquors

CLEANSING THE RIBBONS.

After the ribbons have been woven, they are taped in the vat round the rollers. There is then run into the vat a solution of from 5 to 10 per cent. of soap (a good quality should be used—white olive oil or cocoa nut oil soap is the best) ; the quantity of the soap depends upon the amount of scouring required. The operation is carried on at the boil, the ribbons being kept running through for three to four hours. Then it is well to run out the soap-liquor, and to run in fresh and work again for an hour. This soap bath need not be thrown away, as it can be used for the next batch of ribbons. A third bath may be given if required, and this also can be used again. Thus the first soap bath of a batch is thrown away (or, better, arrangements are made to recover the soap it contains) ; the second soap bath is used as the first soap bath of a fresh batch, while the third soap bath is used as the second soap bath of the next batch, by which means an economy in the soap used is effected, and at the same time the scouring is really better done. After the scouring is completed, the goods are well washed first with warm and then with cold water, when they are ready for dyeing.

DYEING.

For dyeing mixed silk and cotton goods, there are several general processes available :—(1st) The silk may be dyed first ; then, after mordanting, the cotton is dyed. (2nd) The cotton is first dyed with the benzidine colours, and then with those colours which have no affinity for cotton, the so-called acid or azo colours. (3rd) Both fibres are dyed at the same time. In this case only simple colours as a rule can be dyed.

By the second and first plans both simple and compound shades can be dyed.

1st Method.—In this method the silk is first dyed with any colours that will not work on to the cotton, such as alkali blue, naphthol yellow S, acid green, etc. These colours must, however, be able to stand a slight soaping, which is given to clear them of any of the cotton colour they may take up. After dyeing the silk, the goods are treated with a tannin solution, and a bath of tartar emetic ; the cotton is dyed cold, so that the shade of the dyed silk is as little affected as possible. Considerable care will have to be exercised in dyeing the cotton to ensure the shade of the silk being exactly matched.

PALE AND MEDIUM BLUES.

The silk is dyed with alkali blue, using 3 per cent. of colouring matter and 5 to 12 per cent. of soda crystals, or, better, borax. The bath is used at from 170° to 180° F., and the ribbons are thoroughly worked in it for about half-an-hour. To ascertain when the dyeing is finished it is advisable to attach small pieces of ribbon to the main quantity of ribbons and to detach one at the end of half-an-hour and pass it through a weak acid bath ; if the blue develops to the right shade the dyeing is done ; if not, it is continued a little while longer until a sample piece on taking out and souring comes up the right shade of blue ; then the dye liquor

is run out, wash water is run into the dye vat, the ribbons are run through two or three times, then the wash water is run off, and a weak bath of sulphuric acid follows, using about a half-pint of acid to 10 lb. of ribbons. This bath is best used at a gentle warmth, and the ribbons are worked in for 15 or 30 minutes, so that the blue is properly developed and fixed on the fabric; fine greenish blues are thus obtained. The ribbons are then well washed in clean water, when they are ready for the tannin bath, which is used cold, and contains 1lb. tannin in 10 gallons of water, the ribbons being worked in this for two to three hours; then, after running off the tannin bath, the goods are treated to a bath of tartar emetic, 1 lb. in 10 gallons of water, which is used cold. In this they are worked for 15 minutes to half-an-hour, when they are washed with water. The dyeing is done with a cold solution of cotton or water blue, care being taken to choose such a shade of these as will match the shade of alkali blue used for the silk. When the cotton has become dyed to the shade of the silk, the ribbons are washed in water and dried; if necessary, the ribbons can be brightened with a weak bath of acetic acid. By using the different brands, 3R to 6B of alkali and cotton blues, a great variety of shades may be dyed.

PALE GREEN.

The silk is dyed with new green, or acid green for yellow shades, with the addition of tartrazin, in a weak acid bath, using from 1½ to 2 per cent. of colour and ½ per cent. of sulphuric acid; the dyeing is done at 150° F. When dyed the ribbons are washed, and the cotton is mordanted in tannin and antimony as before, then dyed in a cold bath with new green, auramin, and a little acetic acid. When properly dyed the goods are brightened with acetic acid and dried.

A variety of shades from green to yellow green can be dyed by varying the proportions of new green and auramin.

(To be continued.)

WEIGHTING SILK FOR DELICATE COLOURS.

For dyeing silk in delicate tints, the following method of weighting may be used:—The silk being well boiled off and rinsed, is placed in a bath of chemically pure tannin, which for very light shades may be used at a temperature of 100° F., for darker shades at 170° F., and is turned into this at frequent intervals for two hours. For heavy weighting, 1 lb. of tannin in one gallon of water is used: for less weighting weaker solutions are required. The tannin is very solidly fixed on the fibre, and therefore resists the after treatment with water. The weighting with tannin is not to be classed as injurious or fraudulent, as the silk fibre is not rendered brittle, but a weak silk thread rather gains thereby in strength. (This is a bit of very special pleading on the part of the German writer from whom we copy. We are of opinion that weighting of silk, however it is done, is fraudulent; it is done not to increase the lustre or finish of the silk, but to make it appear heavier to the purchaser.—Ed. *T. M.*) The required charge being obtained, which is ascertained by drying and weighing a small sample of the batch, the silk is lifted from the bath and well pegged. It is then ready for subsequent operations, or it can be dried at once. If a still higher weighting be required, the silk, after pegging, is worked for a quarter of an hour upon a cold bath of ½ lb. tartar emetic in 1 gallon of water, when the tannin fixes the oxide of antimony of the tartar emetic, and a considerable weighting can thus be obtained. This weighting resists washing very well. This method of weighting is rather expensive, but the process is very much cheapened by retaining the baths for future use, refreshing them from time to time, and it can be kept in use for several weeks. The tannin baths are liable to ferment and thus become sour; but this inconvenience may be prevented by adding five drops of a 10 per cent. solution of carbolic acid in alcohol per gallon of the tannin bath. It is desirable to add a little of the carbolic acid to the tartar emetic bath.

Alkaline Yellow R is a substantive dyestuff brought out by Messrs. Dahl and Company. It dyes a pure yellow upon cotton, silk, and mixed fabrics in the same way as chrysamine, with Glauber's salt, common salt, soap, and the colouring matter. Common salt gives deeper shades, but these are not so pure in tone; phosphate of soda may be used instead of Glauber's salt. The dye-baths are not completely exhausted, and may be used for subsequent dyeings. For half-silks and other mixed fabrics the colour will be found very useful.

A new method of dyeing cotton with alizarine blue and allied dye-stuffs has recently been patented, and is especially applicable to alizarine blue, alizarine green, alizarine black, alizarine red, purpurine, alizarine violet, galleine, gallocyanine, cœruleine, anthracene brown, and alizarine yellow. The cotton is prepared with ammonia oleine (sulphated castor oil), dried, steamed at ½ to 1 atmos. pressure, and entered into a cold dye-bath containing—for 50 kilos. of cotton, 700 litres of water, 5 to 20 per cent. of colouring matter, according to the shade required, and 1 litre of acetic acid. After washing for ½ to ¾ hour in the cold, the bath is slowly raised to the boil, and maintained at from 95° C. to 100° C. until exhausted, when the goods are removed, drained, and entered into a new bath at 90° C. containing 50 to 60 litres acetate of chrome 18° Be. in 700 litres of water, which is heated to boiling, and kept quietly boiling for three-quarters of an hour. The dull colour produced in the first bath is developed in the second, and becomes bright and fast. Finally, the cotton is washed in cold water, and, if required, soaped.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Accrington.

The estate of the late Mr. Samuel Bury, cotton manufacturer, passed through the Halmot Court last week. The personal estate (exclusive of ground rents and freeholds) has, we understand, been sworn to be under £140,000.

Blackburn.

Mr. W. Wetherall, of this town, has accepted an engagement to proceed to India, to assume the management of the weaving department of a mill in Ahmedabad. He will sail in the P. and O. steamer "Malwa," on the 13th inst., to assume charge of his work.

Church.

At 2 a.m. yesterday week a fire was observed on premises near to Sharm Hall, Church, belonging to Messrs. F. Steiner and Co., turkey-red dyers, etc., and in addition to the roof being burned off, a quantity of madder was destroyed. About twelve months ago a fire occurred on the same premises.

Cleckheaton.

Mr. Joshua Thornton, senior partner of the firm of Thornton Bros., machine-makers, Marsh, died on Thursday at the age of seventy-five years. Mr. Thornton was one of the founders of the firm, which had risen to a position of some importance. He was a trustee and deacon of Providence Place Congregational Chapel, and a teacher some years ago in the Sunday school. He leaves two sons, who have practically carried on the business of the firm for some time.

The creditors of Messrs. Kemp Brothers, flannel manufacturers, were called together to consider the position of affairs in July last, owing to the demise of Mr. Rawdon Sykes, the last surviving partner. The statement of affairs submitted to the meeting shewed a deficiency, and the creditors decided to wind up the estate under an assignment, Mr. J. S. Wright, accountant, being appointed trustee, with a committee of inspection. The estate has realised much more than the estimates, the good book debts—which comprise the greater part of it—having come within 3 per cent. of the gross amount, whilst the machinery realised between £200 and £300 more than the valuation. This has enabled the trustee to declare a dividend of 20s. in the pound. The cost of winding up the estate has slightly exceeded 4 per cent. upon the total assets—nearly £5,000.

Darwen.

The annual meeting of the Darwen Weavers' Association was held on Tuesday night. The report stated that the contributions for the eleven months amounted to £1,382 14s. 5d. Fifty deaths during that period occurred, on account of which the society paid £300. £97 19s. 9d. had been paid for stoppages of machinery and closing of mills. The gain for the eleven months was £831 15s. 6½d.

Guiseley.

At a meeting of the local board, held on Monday evening, a petition was submitted from the Committee of the Guiseley Mechanics' Institute asking the board to make a grant out of the local rates in aid of technical instruction, and also to apply, on their behalf, to the West Riding County Council for a grant of £500 out of the £2,800 given to that body by the Government for the purpose of furthering technical instruction. The petition set forth that there was urgent need for increased accommodation, which would probably cost about £700. If £500 could be obtained from the County Council, the remaining sum might be made up by public subscriptions. A deputation from the institute, including the president (Mr. Jonathan Peate, J.P.) attended to support the memorial. After discussion the board unanimously decided to adopt the Technical Instruction Act, and it was also resolved to make a grant of £40 to the institute. The board further consented to act conjointly with the committee of the institute in applying to the County Council for a grant of £500.

Mossley.

Mr. George Andrew died on Sunday evening at his residence, Apsley House, Mossley, aged 68 years. He was the principal partner in the firm of Messrs. George Mayall and Co., cotton spinners, and also the chairman of the directors of the Brookbottom Spinning Company. He was the oldest resident county magistrate in the district. When Mossley was created a Local Board district Mr. Andrew was elected the first chairman, and upon the incorporation of the borough he was elected the first mayor. In 1889 he was elected a county councillor for Lancashire.

Manchester.

It is with much regret that we have to announce the death of Mr. Walter Haworth, of this city, which occurred on Thursday, at his residence in Bowdon. The deceased gentleman, who was only 49 years of age, and unmarried, was the youngest of the three brothers Haworth, who have now for many years carried on the business of yarn agents under the style of James Dilworth and Son—probably the largest firm of its kind in the world. His father was manager of the late Mr. George Wood's cotton mill in Salford. Like his brothers, however, he has always been associated with the commercial rather than the manufacturing branch of the cotton trade, having entered the establishment of Messrs. Dilworth and Son in early youth, after being educated at the Manchester Grammar School. Mr. Haworth was of a retiring disposition, and took no part in public affairs. He was a Congregationalist, and was early associated with the Eccles Congregational Church, in the Sunday School of which he was also a teacher. Since removing to Bowdon, some sixteen or eighteen years ago, he has been an esteemed member of the Congregational Church there, and all religious, charitable, and philanthropic causes in connection with that and other denominations found in him an ever ready sympathiser and generous helper. His death, which was due to an asthmatic affection from which he had suffered for some time, will cause profound regret amongst a wide circle of friends.

Morley.

Alterations and extensions are being carried out at the already extensive Highfield Mill (Mr. John Wilson's).

Oldham.

The building of the Pine Mill is progressing rapidly, and the directors are doing all they can to get the work pushed on with.

Mr. Thompson, weaving manager at the Glebe Mills, Hollinwood, has quitted his position under that firm.

Mr. Samuel Buckley has been appointed mule overlooker at the Hathershaw Spinning Company, in place of Mr. James Lowther, resigned.

Mr. Alfred Barlow, of the Green Lane Spinning Company, has been appointed manager of the Irk Mill Company.

It is reported that a number of Oldham Spinning Companies are creditors for fair amounts in the estates of three yarn agents, who have recently held meetings in connection with their affairs.

Mr. T. H. Smethurst, cotton spinner, and Mr. J. Smethurst, mill

amongst the first seven subscribers of the School Street Mills Manufacturing Company, Limited.

A start has been made at the Richmond mill, belonging to Messrs. Murgatroyd and Stansfield. Some of the machinery has been at work about a week and other portions are being got to work as quickly as possible.

Early next year a stoppage will take place at the Neville Mill Company, to allow of a new steam engine being put in to replace the one now at work. During the stoppage the work of replacing the machinery will also be proceeded with.

It is reported that steps are being taken to form a company to take over Union Mills, Royton, a portion of which was recently destroyed by fire, for the purpose of transforming them into a ring spinning concern.

During the past fortnight Oldham spinning companies have been making large purchases of cotton. The system now so much in vogue is to buy on conditions of delivery at so many bales per month, etc., as the case may be.

Fairly satisfactory progress is being made in connection with the extensive alterations which are taking place at the Oldham Spinning Company's mill. About 6,000 additional spindles have lately been got to work in the new mill. It is expected that the new engines will "turn round" in February.

Sir P. P. Radcliffe, Bart., has offered the Royton Local Board a strip of land for the purpose of making a good road to the mill which is being erected by the Holly Spinning Company, the directors of which are proceeding to get out the contracts in connection with the building.

The directors of the Royal Mills Company have given out the following contracts in connection with the new mill which is about to be erected by the company:—Building, Messrs. Storr, Stalybridge; boilers, Oldham Boiler Works Company; engines, Messrs. Wood, of Bolton. The steam engines will be triple expansion with rope driving.

So far as can be ascertained the new cotton crop is not giving satisfaction to Oldham spinners. The workpeople are complaining of bad spinning, and the employers of extra lossiness. The other day the writer was informed by a manager that he had ascertained on one lot of cotton that the increased loss up to the engine head was over two per cent. Excessive moisture is one of the chief complaints of mill managers and cotton spinners.

Speaking at a gathering the other evening, Mr. J. E. Platt (of the firm of Messrs. Platt Brothers) referred in very hopeful and encouraging terms to the state of the local iron and cotton industries. He considered the working people were in a very favourable position, and that they ought to regard themselves exceedingly fortunate that fortune was smiling upon this part of the county in such a manner. Their own works were exceedingly busy, and he believed the other large machine works at the other end of the town were in a like favourable position.

Mr. Fallows, of Messrs. Walton and Sons, Houghton Dale, Denton, has delivered a lecture to the members of the Oldham Mutual Cotton Class on "Cards and Carding." In the course of his remarks he said the different ends sought to be obtained by the carding process were—The removal of all impurities, either natural or foreign, from cotton which might have escaped the preceding processes; the extraction of all immature, short, broken, or nipped fibres; to disentangle the confused mass of fibres, and place them side by side in parallel order; to attenuate the heavy sheet of cotton forming the lap into a thin fleece, and contract it into a ribbon or sliver, fitted for the next process. There were three kinds of setting and dispersion of points, or as the foreigner would say the "peopling" of cards—plain, twill, and rib (graduated top). As to the kind of card to be used, he contended that a tempered steel card was certainly the best.

Preston.

An inquest was held at the Preston Infirmary, on Monday, on the body of Patrick Brennan, 61, a cotton mixer at Messrs. Dewhurst's mill, Higher Walton. Deceased was engaged on the Friday previous in throwing hoops from the mixing-room door at a height of 13 feet from the ground, when he fell out. A verdict of "accidental death" was returned.

In Preston there is a great dissatisfaction with the proposed uniform list of prices for weaving. It is stated that on the whole it means a reduction of wages. The secretary of the Preston Power-loom Weavers' Association (Mr. Luke Park) states, from calculations he has made as to the results of the new list, that there would be a reduction of ¼ to 11 per cent.; that there would be a loss on all narrow looms or looms of less than 45in.; a reduction on all fine yarns—on 100's twist it would be 5 per cent., on 100's weft 4 per cent.; and as much finer yarns than these are used in Preston the reduction would be greater. The advances promised on some sorts are not so good as they appear to be. In one case weavers would ostensibly receive an advance of 16 per cent., but in fact it would amount to only 3 per cent.; and for another sort they would get 1 per cent. instead of 5 per cent. He asks the weavers to consider whether they will have this new list or not, as the looms on which an advance is sure are few in Preston.

Padiham.

The weavers' strike at Britannia Mill (Messrs. R. Thompson and Son) came to an end on Monday. They complained of excessive steaming and overheating in the shed. An agreement was come to that in the future they would not turn out until any grievance of which they might complain should have been duly considered by the officials of their association, and due notice given to the employers.

Rochdale.

Messrs. James King and Sons, Rochdale, have given a repeat order for 36,000 spindles to Messrs. Taylor, Lang and Co., Limited, of Stalybridge.

The Buersil Spinning Company, Limited, have placed the order for their scutching, carding, and frame machinery with Messrs. John Hetherington and Sons, Limited, Manchester.

Rawtenstall.

At the Police-court, on Thursday, the Whitewell Bottom Spinning Company, Newchurch, were charged with breaches of the Factory Acts by employing 26 children, young persons, and women during part of the time allowed for meals. The company's manager attributed the irregularity to the variations of the clock at Waterfoot Railway Station. A fine of 10s. and costs was imposed in each of three cases, and costs in others—about £15 in all.

Wakefield.

On Tuesday night, shortly after eight o'clock, a fire, which resulted in the total destruction of a large woollen-cloth mill, occurred at Horbury, near Wakefield. The mill, at which 400 hands were employed, belonged to Messrs. Archer, Ritchie, and Co., and stood on the banks of the Calder, at Horbury Junction. The outbreak occurred on the third storey, and though the fire spread with great rapidity it was found possible to save the books and papers of the firm, and also a great quantity of material which was stored on the lower floors. The damage is estimated at £20,000.

SCOTLAND.

Calton (Lanarkshire).

The personal estate of the late Mr. William Walker, yarn merchant, has been returned at £2,384.

Dundee.

The opening address in connection with the course of lectures on chemistry, dyeing, and bleaching at University College was delivered by Professor Frankland in the College last week. There was a large attendance. The lecture was entitled "The Conversion of Refuse into Beauty and Wealth," and dealt with the many varied and beautiful commercial products obtainable from coal-tar. Britain was by far the largest consumer of gas, London requiring more than the whole German Empire. In these islands 90 million tons of coal were annually carbonated, and the principal by-product—coal-tar—was for long a source of great trouble to gas engineers. The lecturer then gave a history of the long chain of discoveries which had resulted in the production from the tar of so many beautiful colours. In 1872 there were 20,000,000 lb. of madder imported to this country, while in 1887 the importations had fallen to 2,000,000 lb. These figures shewed how completely the new compound, alizarine, had taken the place of the old vegetable dye. Cochineal had also been almost wholly superseded, while a substitute for indigo had been extracted from what was once looked upon as a waste product. In 1880 the amount of cochineal exported from the Canary Islands was 5,000,000 lb., which in 1888 had fallen to 1,000,000 lb. The advance of science in this direction had brought materials of the most exquisite shades of colour within the reach of the very poorest, and it was quite erroneous to suppose that the aniline colours were crude and rank, and lacked the delicacy of colour which belonged to the vegetable dyes. It was equally erroneous to suppose that aniline colours were more fugitive than vegetable ones, and more easily affected by light, as of late years scientific discoveries had done much to obviate these defects. Professor Frankland was frequently applauded for his able handling of the subject.

Edinburgh.

A petition for the liquidation of the Edinburgh Exhibition was yesterday presented in the Court of Session. It is computed that the deficit will be about £30,000. The guarantee fund is £26,000.

Glasgow.

The following table gives the value and destination of the exports of cotton and linen goods from the Clyde for last week, and also the totals of the previous week. The first line refers to cotton goods, and the second to linen:—

India, China, Straits.	U. S. and Canada.	Continent	Totals.	Previous week.
£76,424	£12,553	£45	£89,032	£75,999
200	15,264	34	15,498	2,880

Paisley.

The *Financial Times* publishes the first instalment of the list of shareholders in Messrs. J. and P. Coats, Limited, together with the number of shares which they received at the allotment. It states that the list is one of the largest of modern times, comprising over 8,000 names, and the enormous demand for shares may be gathered from the fact that no less than 15,000 persons applied between them for £15,000,000 worth of shares. Of these £13,000,000 were applied for in the United Kingdom, and the remainder in America, Canada asking for £200,000, the rest being required in the United States. In making the allotment, 200 clerks were employed for three weeks, and two shifts being employed, the work was continuous. Great care was taken in allotting the shares to ensure the co-operation of the trade for the undertaking. Drapers who applied received as nearly as possible a full allotment, while all genuine applicants received fair attention. The Stock Exchange was not neglected, but deliberate 'bulls,' or applicants suspected of being such, were entirely left out in the cold.

IRELAND.

Belfast.

A fire broke out on Sunday at the extensive ropeworks of Mr. Ivory, Victoria-street, by which a large stock of hemp and coarse flax was partially destroyed. The loss, which is considerable, is stated to be covered by insurance.

The forty-eighth ordinary general meeting of the Brookfield Linen Company (Limited) was held on Wednesday, in their offices, Donegal-street, when a dividend of 5 per cent. was declared, and a handsome balance carried forward to next year.

At a meeting of the general committee of the Belfast Technical School, held on Tuesday for the purpose of considering the advisability of calling upon the Municipal Council to put into force the Technical Education Act—Mr. James Musgrave, J.P., presiding, the following resolution was passed:—"That a deputation be appointed to wait on the Finance Committee of the Municipal Council to express the desirability of putting the Technical Education Act into force in this city; and that a committee be appointed to confer with the committees of the Working Men's Institute and the Government School of Art, in the hope of securing joint action in the matter."

THE JUTE CROP OF BENGAL.—The final report on the crop for the season 1890 is as follows:—"In the preliminary forecast issued on the 21st July it was remarked that the weather had up to that time been very favourable to the jute crop, except in one or two districts, in which excessive rainfall had done some injury, and it was said that on the whole a full average or more than a full average crop might be expected. Since then there has been excessive rainfall, followed by floods, in many of the jute-growing districts. The crop has materially suffered from this cause in Muddea, Mymensingh, Purneah, and parts of Jessore and Furreedpore, and to a lesser extent in Rajshahye, Rungpore, Bogra, Dacca, and Tipperah. The outturn will in consequence be less than might have been harvested had there been no injury from floods. But, still, the total yield is estimated to be better than that of last year. On the whole, a good average crop may be expected. The figures furnished by collectors of actual areas sown were omitted from the preliminary forecast because of their manifestly incorrect and contradictory character. They have since been revised, and are now produced. Annexed are statements shewing the estimated area sown under jute in each district, and the estimated out-turn expressed in fractions of a rupee. The total out-turn is estimated to be a 15 to 16 anna crop. The total exports from Calcutta last year amounted to 8,768,974 cwt. In the present year an increase of about 20 per cent. on this quantity should be available for export."

Miscellaneous.

ORIENTAL CARPET WEAVING.

(By Professor Dr. J. Lessing, Berlin.)

It is one of the most remarkable phenomena in the sphere of our European civilisation that carpets of the better sort have always come to us from the East. A carpet in Europe and a carpet in Asia are two different things. They mean the same thing as to name and also as to purpose in some measure, but in reality the carpet occupies a far more important place in the East than amongst us, and it is therefore not surprising that a wealth of artistic skill and devoted effort, to which Europe furnishes no parallel, should be expended on it.

In Europe the floor carpet is only a portion of the furniture. If after some time it has become unfit for use its place is supplied from the shop, but the same carpet is no longer to be had: another sort of design is now in use. In the East, however, the position is very different. There the carpet constitutes the centre of the house—in many cases the only ornament. It is there of the greatest importance in all rooms, and even in mosques. Under these circumstances the carpet is, in Oriental life, the preserver of artistic forms, and all the skill possessed in the arrangement of colours is concentrated upon it. The carpet then excites the astonishment of Europeans as a piece of perfect art which Europe cannot equal. It becomes amongst us the object of different imitations, but after a time when the original Oriental models have been departed from by some fundamental change, as in the case of silk weaving, the inventive power of the European gives way, and Europe is then compelled to have recourse once more to the Orient. While in silk weaving the period that stood lowest from the artistic point of view was that which supplied its needs from Asia, the history of carpet-weaving exhibits an exactly opposite phenomenon; here it is just the period of best taste and highest artistic development that is inseparably connected with the Oriental carpet.

The Greeks used carpets, which they called Babylonian, and which were woven fabrics provided with fanciful images of animals. Their place is taken in the golden age of Greek art by the purely Greek style of ornamentation. Whenever we find a large piece of carpet mentioned in connection with Greek and Roman culture, it is designated as a Babylonian carpet. All through the Middle Ages, mediæval churches as well as Greek temples were supplied with Oriental carpets. The Oriental carpets in our museums are characterised by a splendour and beauty no longer found in the East. They came from the East to Europe, were deposited in the vestries and churches, and have been preserved there till the present day. We can trace the appreciation of these carpets in the sphere of painting. When Holbein, for instance, wishes to represent his Madonna most magnificently he spreads an Oriental carpet at her feet.

When in the 16th century the church became less prominent, and its place was taken by noble families and princely courts, and later, as was the case in the Netherlands in the 17th century, by the rich burgher class, the Oriental carpet always played a conspicuous part in the decoration of their rooms. This custom was continued in the 18th century. The castles of that age also are decorated with grand Oriental carpets.

Only in our own century do we find a change for a short period. Machinery was applied to carpet-weaving, which of course existed previously amongst us, although only to a moderate degree. It was now possible to produce carpets for a lower price than the carpets brought to us from the East. From 1820 to 1860 Oriental carpets were rather rare in Europe, particularly in Germany; people were contented with ordinary factory goods. As soon, however, as greater prosperity prevailed, as soon as the present taste asserted itself, the Persian carpet resumed its sway. If we now desire to furnish a house splendidly, if a chamber is to be decorated for the reception of a prince, if we wish to adorn a hall for some festal gathering, we resort to the Oriental carpet, which is known to us under the collective name of Persian carpet. It will hardly be going too far to say that there is scarcely a well-furnished house in Berlin which does not count a Persian carpet amongst its possessions. Still we must not forget how exceedingly recent is the wide use of Persian carpets in our midst. About 30 years ago there were very few Persian carpets in Berlin, and they were the property of a few persons who had lived in Paris and had procured them there.

The carpets of which we speak are all floor-carpets. We must, however, be very careful in our use of words. We use the word 'carpet' only to describe a covering for the floor, but the equivalent words in other languages are not so limited in their application. The Italian, for instance, uses one word to describe a hanging for the wall and a covering for the floor. The French word *tapis* also has the same double significance. Mediæval writers are so loose in their way of expressing themselves that the reader can never tell whether a carpet or a hanging is intended. The floor carpets, of which we are speaking, are those covered with a peculiar hairy pile. This article, with which we are now so familiar, was lately so little known that a special expedition was sent out in 1853 from Silesia to Smyrna to ascertain exactly the method of manufacture. To this expedition the carpet factories of Silesia owe their origin. Of course carpets were previously made in Germany in great quantities, but it must be noticed that the *technique* of the European pile-carpet is completely different in that it is connected with the *technique* of ordinary velvet. If the pile be left uncut, we get a variety of carpets which are usually designated Brussels. Many English carpets also are made in this way. If the pile be cut, it rises up, and the individual threads spread out in a tuft-like way, forming a structure like velvet.

This plan is comparatively simple when the production of a pile article of one colour is in question. As soon, however, as an attempt is made to produce patterns in this way serious difficulties arise. If only two colours equally distributed be wanted, then the matter is still relatively simple; but with six different colours the difficulty is found to be far greater, considerable dexterity being necessary for the right arrangement of the patterns. Besides, we have in these cases a considerable increase of the cost, because different materials remain unused on the reverse side. It follows from this that as few colours as possible are used in such designs, which in the case of European carpets is not a very serious fault. The articles known amongst us as ordinary Brussels goods exhibit geometrical patterns, with a small expenditure of colours. We also find pattern-loom plushes with rich flowers magnificently got up.

The sofa covers in use about a generation ago, which are still to be found in the possession of families in small towns, were prepared in a special manner, that is, with a unique kind of warp, which was originally white and was then printed. If we want to print cotton the matter is very simple, as it is like printing on paper; but if we weave a pile carpet and then try to print on the pile we find that we cannot do it. The white warp must be previously printed, because owing to the individual warp-threads not being quite uniform, patterns of that sort will never be particularly sharp, and will have a poor appearance. The manufacturer, knowing that this will be the case, is likely to select a diffused pattern, and thus we get patterns with leaves scattered over them.

Putting aside these printed fabrics, in which nothing really good can be produced, there remains the group first mentioned, in which the worker uses different warp-threads, and is restricted to a small number of colours and a limited series of patterns. If we compare a European pattern woven in this way with an Oriental one the difference is obvious. The Oriental carpet contains an infinite variety of colours, like a large meadow with countless leaves and blossoms. The Oriental carpet, moreover, possesses extraordinary durability, whereas the European carpet fails often after only a few months wear. The Oriental carpet loses nothing of its colour and firmness even when it has been used for years; if it has become soiled it is simply laid in water and washed, whereby its old splendour of colour is substantially restored. As already remarked, the secret was discovered in 1853 by the Silesian weavers. I leave it undecided whether or not this method was earlier known in Europe, but, in any case, it had been completely forgotten. Such an Oriental carpet is not woven, but tied. The fact has become a sort of common property amongst us; it has even been transformed in a sense into a form of handiwork practised by our ladies. The two ends of the knots stand up and form the tufts. These Oriental articles are produced in Asia Minor on looms, mostly by women, with the simplest appliances. A photograph representing the process of manufacture shews women seated at the looms; above is a round beam, on which the warp-threads are wound. These warp-threads hang down, and are attached below to the beam. They are simply strips, woven threads, nothing more. Between these threads is found a very simple shedding arrangement to make the equal and unequal threads play alternately in front and behind, so that the weft can pass through. These warp threads appear at last only as fringes; they are mostly stiff, made of coarse hemp. The tying which follows produces knots. When a series of threads has been tied it is beaten with a simple wooden reed. A thread of weft is next shot through so that the woollen threads cannot break, and this series of knots is now firmly fastened. Then comes the second series of knots, and so they proceed.

If the piece to be tied is long, and the worker has already reached a height which is not convenient in her crouching attitude, the piece is rolled up on a roller. When the carpet is finished it has to be cut, as the pile threads are not uniform. This cutting is usually effected by the nomad women, who are very expert in it, with a pair of scissors. The whole pattern of such a carpet is composed of very small squares, and a copy can easily be taken of one on ordinary paper, divided into squares.

The material varies. It is usually pure sheeps' wool, which is grown in the East with the greatest care for this purpose. Sheep having specially good wool have linen coverings sewn upon them in order that the wool may be kept clean; and also because in this way a considerable quantity of animal fat passes into the wool, saturates it, and makes it fine, soft, and delicate, thus imparting to Oriental carpets that silky gloss which suggests fabrics made of silk. Real silk carpets are very rare, and scarcely occur at all in Western Asia. Goats' hair is also partly used, as there are certain varieties of goats which have supple glossy hair. Camels' hair is likewise employed. The materials used for the warp threads consist of hemp yarn, or single wool. In the very finest carpets even silk is used for the warp-thread, merely in order to render the carpet more valuable, and especially to make it more durable. It is tied over the silk with wool, and the silk appears only at the end, and forms fringes, the characteristic of Persian carpets. So it happens that they can be seen on both sides of the carpet.

The height of the pile has varied at different times. In particularly fine articles it is usually kept low. The higher the pile the more can the threads be shifted to the right or the left. If the goods are intended to be as cheap as possible the pile is made longer. The carpets which come from India have tolerably long piles.

Of special importance is the dyeing of the wool, for which purpose unbleached wool is used. The European dyer aims principally at getting the colours as clear as possible; he bleaches the wool by all sorts of chemical means; he removes the fat from it, and then puts the colours in so that they are clear and distinct. In the East, on the other hand, the fat is left in as noted above, so that the colours acquire the peculiar well-known golden tint. The dyeing of such a fatty wool is certainly attended with considerable difficulty, as it does not take the colours so sharply and distinctly, but that is not aimed at. The dyeing of the

East rests on primitive traditions, and possesses a great variety of colours, but the peculiar broken shades which pass into grey and chocolate are practically excluded. The Orientals obtain harmony by the infinite variety of colours, none of which contrasts sharply with the others. We must not fail to notice, however, that these soft and somewhat broken tints owe their origin to the want of cleanliness in the process of dyeing. The remains of colours are not removed from the vat or kettle when a new piece is to be produced, precisely because this constant blending of colours causes the charm which is so attractive in Oriental carpets. This procedure has, indeed, its disadvantages; the dyers, for example, if they wish to imitate a tint are never able to reproduce all its shades. We have an instructive instance of this in our museum, in a coverlet which has a sort of lilac stripe in the middle. The dye was used up, and the dyers could not reproduce it.

(To be continued.)

THE RELAY SYSTEM IN JUTE MANUFACTURING.

A representative of the *Dundee Advertiser* has had another interview on this subject, this time with a Dundee manufacturer, carrying on an extensive business. The views expressed by him on the subject are as follows:—

I have read with care and with interest the articles on the relay system which appeared in the *Advertiser* last week. I am quite willing to tell you what I think of the subject, although I am bound to say that at present it can hardly be called a practical question. It is all very well making abstract proposals with regard to this or that industry, but surely what ought to be taken into consideration is, in the first place, whether the change is advisable; and, in the next, whether it is possible. And, of course, if it is impossible, it does not matter whether it is advisable or not. As trade and markets and the law are at present, the proposed change is not possible, and were it possible it is not advisable. The Factory Acts prohibit you in the meantime, and the first step that has to be taken is an alteration in them. But suppose you were allowed to work by shifts, and keep your machinery running almost day and night, where are you to get your workpeople? Were I to start 20 or 30 additional looms next week I should have difficulty in getting the hands to work them. The talk about surplus labour just now so far as Dundee is concerned is perfectly absurd. Instead of surplus labour there is scarcely a mill going but could employ additional hands. I could fancy a time when it might be advisable to run double shifts. Say, for instance, if half of the mills in Dundee were to be closed through fire or from other causes. Then I should say it would be advisable to get a short Bill passed through Parliament giving the remaining millowners liberty to run double shifts so that employment might be given to the people, and the necessary quantity of goods being produced. Then, personally, I have a strong objection to people engaging in labour at night. Nature did not intend us to work by night, and I think the idea is almost monstrous that poor people, women and children, should be working in mills by gaslight, so that the master, the capitalist, may turn out so many yards more of hessian and benefit thereby.

Neither this relay system nor an eight hours' working day is the solution of the problem. The difficulty is not at home but abroad, and instead of tinkering at these questions by proposals such as those advocated, the hours of labour and the conditions of labour in foreign countries should be altered. Before any radical improvement is effected there must be international legislation on the subject. On the Continent the hours of labour are longer than they are here, while less is paid in wages. The result is that Continental firms are at liberty, on account of this Free Trade of ours, to pour unlimited quantities of manufactured goods into this country, and, of course, much cheaper than can be produced here. What, for instance, is the linen trade now compared with what it was prior to 1866? Since that time it has, owing to these causes, gradually diminished. In speaking of the eight hours question, one has always to bear in mind that America is in quite a different position from this country. If necessary, America could produce within herself sufficient flax, jute, and hemp to meet her wants, so that she cannot be compared with this country.

In thinking of this labour question, my belief is that among the first things that should be done is to bring about this international understanding as to the hours of labour and wages, so that this country may be on an equal footing with the Continent. There is a difficulty to be met just now, and that is the growing inclination of both employers and employed to form themselves into combinations. I have no objection to combinations, but when they are formed mainly for the purpose of fighting—by the workpeople against the masters, and by the masters against the workpeople—I have no sympathy with them at all. Why should master and man not meet and discuss their grievances in a friendly, yet thoroughly business-like manner. There might often be a greater effort to meet the wishes of the workpeople. For instance, on the last occasion of dull trade a proposal was made by the employés that the mills should run short time. This was refused by the masters, but before long they were forced, not to go on short time, but to stop part of their machinery. The result was that many of the hands were paid off and then left the town, got employment elsewhere, and have not returned, thus reducing the number of workpeople in the town. It is too much a practice on the part of masters to treat their workpeople as mere bits of machinery, or as Ruskin describes it, wage-receiving animals. The display of a friendly interest on the part of a master towards his servants will often go a far way to heal up grievances and prevent disputes. It does not require money to do that. The workingman is not such a fool as to expect that every time you speak to him you are to put your hand in your pocket, or that you are to send ribbons to his wife, and nonsense of that sort. What is wanted is friendlier relations between master and man. I grant that very often there appear good grounds for the workpeople complaining against their employers. Say, when trade is dull and the wages, low enough before, have been reduced, the master makes no difference in the way of living, he keeps up his big house and his carriage and his servants. There is little wonder that many declare that the employer must be making money. They, however, forget that the employer may have so much of realised capital, which has been acquired perhaps when trade was really good, or that belongs to him from other sources. It often happens that the employer keeps up this style while he is losing money daily. The employer has many difficulties to face, and he is liable to many losses. Some discovery may be made or an improvement effected that will take away business from him or alter the condition of affairs so much that he is unable to carry on his business with a profit. Every employer, no matter who he be, is liable to sudden losses, and in all fairness provision must be made for it. One way to bring about a friendlier state of affairs between the two classes would be by co-operation, and on that head I quite concurred with what Mr. Gladstone said the other day on that subject. But here is the difficulty. Can co-operation and trades-unionism exist together? I am afraid they can not. For instance, suppose I am an owner of a shipbuilding yard, and have some hundreds of men in my service. I call them together, and we arrange that they shall have a share in the business. So much per cent. of their wages is set aside for capital as the basis of their share of profit. They appoint a Committee to seek for orders and make contracts—the rate of wages having been settled. If they, however, remain members of Trades Unions, and a demand were made for a rise of wages throughout the country, some fine day the men in my yard would get notice that unless they received a rise of so much per week they would have to come out. You will thus see that the two—trades-unionism and co-operation—cannot be carried on together.

Attention has been drawn to this question at present chiefly in consequence of the demand that is being made by the miners to limit by Act of Parliament the hours of daily labour to eight. The reasonableness of the demand of men engaged in mines in not being employed for more than eight hours must be apparent to everyone, but it would appear most unnecessary to interfere with the freedom of adult men, and for Parliament absolutely to prohibit any man working longer than he chooses to do. As a matter of fact, I doubt if there are any mines at present in this country where the miners are working 48 hours per week. On the contrary, a large owner of coal mines in the West of Scotland informed me lately that miners were not working above 30 or 36 hours per week. Seeing that we don't import coal, but export it, the limitation of the hours of labour in coal mines would only raise the price against ourselves in this country, though doubtless it would add to the expenses of the production of our manufactured goods. But were the same system—namely, the limitation of the hours to eight—to be carried into other trades, it is abundantly clear, from what I have already mentioned, that the difficulty of competing with such manufacturers of foreign countries would be enormously increased, and the working classes must evidently be prepared either to wait until other countries are willing to reduce the hours of labour, or to go back to Protection for this country, which, certainly, I for one could not advocate, seeing that ultimately it could only prove ruinous to our interests.

THE McKINLEY TARIFF ACT.

In answer to a question, Mr. G. H. Hoffman, the President of the Bradford Chamber of Commerce, said on Wednesday that the Chamber had not been officially asked by the United States Government what would be the probable effects of the McKinley Act here, but members had been asked individually. The opinion of the Manchester Chamber was asked officially, and it was evident that the United States Government had made extensive inquiries. He held that it was not necessary to tell the United States Government all we knew. Without prophesying, he might say that the effect of the Act upon us might disappoint a good many gentlemen who assisted in passing the Act. These inquiries on the part of the United States Government, he thought, betrayed some uneasiness, and made one ponder upon the effects of the tariff in America. Englishmen had been watching with considerable amusement to see how far this zeal for the "development of American resources and the reward of American labour" would carry those disinterested legislators on the other side of the Atlantic. They had passed this Act. He had taken the trouble to find out what probably, in the cost of a certain 4s. article, really was the reward for capital and labour in England, that was, deducting the price of the wool. He found that 1s. 8d. was the reward here, whereas 4s. 4d. would be the possible reward in the United States. We in England had always admired the philanthropy of a good many of these American legislators. They had now a chance of shewing it. We had never begrudged the American people a fair reward for their labour. The more they earned the better customers they were likely to be for at least some of our products. But he was very much afraid they would not get their proper share of this reward of capital and labour. All reports so far agreed that wages in the United States since the passing of the Act had not advanced. Prices had advanced—in some cases enormously. How much longer the majority in the United States would be willing to pay McKinley prices he did not know, because it was evident that they would get less for such products, as they could produce cheaper than we could produce. To us the effect of the Act would probably be temporary discomfort or dislocation of trade, but to the Americans it would be permanent and far-reaching injury to their best industries. He believed the majority of them, however, were beginning to see what the Act really meant. They were seeing that this greediness of the minority was going to do what greediness had often done before—to kill the goose that laid the golden egge.

Sir HENRY MITCHELL said he thought it would be very unwise to discuss the question in view of the publicity which would be given to their utterances, but if it was to be discussed it ought to be discussed thoroughly. The president had stated his views. Other members might have different views. Having considerable experience in connection with the management of business, he would certainly differ from some of the views expressed by the president. One effect of the tariff certainly was to injure this district very seriously. It was impossible to export goods to America unless one was prepared to take lower prices. The consequence would be smaller profits, and probably lower wages for workpeople.

THE new tariff proposed by the French Government is of a highly protective character. It is far more complex than the present one, and it contains 722 articles, or, perhaps, if all the sub-divisions be reckoned, 2,000. The duties for the greater part have been increased by, roughly speaking, 25 per cent., the maximum duty of the present tariff being in eight cases out of ten the minimum of the new tariff. In a number of important articles the present duties are doubled or trebled. On cotton yarns the highest and lowest duties are raised by 25 per cent.; woollen yarns and silks are unchanged; common linens are slightly increased, and fine linens about 20 per cent.; lace, 20 per cent.; muslin curtains, 80 per cent.; cloth, about 8 or 10 per cent. The present maximum duty on machines is the minimum of the new tariff, and the maximum is 25 per cent. more. The principle kept in view has been to protect labour. Raw materials, such as raw cotton or jute, are free, and duties have been raised for each article according to the amount of labour supposed to enter into it.

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

Spinners seem to be awaking to the fact that the prospects of the market for the raw material are considerably in their favour providing they properly utilise their opportunities. As yet nothing is heard of any destructive frosts from the cotton states, and we are now well advanced into the season. A mild, open, genial autumn may make the growing crop far and away the largest that has ever yet been harvested. Its average magnitude is now quite well assured. The only question remaining to be settled is as to how far it shall exceed preceding crops. Of its quality, however, very strong complaints are being expressed. It is asserted very forcibly that in considerable sections of the cotton-growing states cotton is being tampered with by the artificial introduction of moisture, many lots having arrived in such a condition as to preclude the belief that the damp contained therein is due to climatic influences. Natural damp such as appears in the bales would effectually prevent all ginning operations, or so far damage the cotton that it would become very easily visible when samples were drawn from the bale. What with the false packing of Indian cottons and the damping of American ones, the position of the spinner is not an enviable one, as, unless the greatest care be exercised, a very large amount of his money will literally evaporate in the atmosphere of the mill. It is to be hoped that the protests being expressed will have some effect in stopping this nefarious conduct. Readers will find our views on the course of prices expressed in our leading article.

COTTON.—The buying of the raw material has again been on a reduced scale, and throughout the week the course of prices has been steadily downward. On Friday spots were quiet, and prices the turn in favour of buyers; the weakness in futures was more marked, a decline of from 2 to 2½ points occurring. On Saturday the depression of spots became more accented, and a reduction of 1/16d. was made in the official rates; futures declined 1 to 1½ points, but recovered half the amount. On Monday the demand for spots revived a little, but holders met the inquiry with such freedom that there was difficulty in keeping prices fairly steady; futures fluctuated about one point, closing with ¼ point gain on the day. As usual there was not much inquiry on Tuesday, and spots became weaker, fractional reductions being occasionally made by sellers; futures went down 1 to 1½ points. Wednesday, usually one of the best business days of the week, was a poor one, and prices tending in buyers' favour; futures made another descent of ¼ to 1 point. Yesterday was a very dull time, though there was a moderate amount of inquiry in the market. Holders, however, offered so freely that it led to a reduction of 1/16d. for middling, and of ⅛d. for grades below; futures were also depressed, losing 2½ to 2¼ points, but recovering 1 towards the close. On the week the result of the changes that have occurred are represented by a reduction of 1/16d. for middling fair and good middling; a decline of ⅛d. for middling, and 5/16d. for lower grades. Futures are marked down 5½ to 7 points. Uplands are being avoided as much as possible, owing to their excessive damp. Texans are much more favoured, not having been complained of nearly so much. Higher grades are comparatively scarce, and are more firmly held than the lower, which are much more abundant. Brazilian has partially declined 1/16d., and Peruvian fully the same figure. Egyptian has been in fair request, but so freely offered that prices are again partially reduced 1/16d. Indian sorts have been slow of sale, and Oomras, except fine, are 1/16d. lower. Africans are neglected and prices nominal. The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forw'ded.	Sales.	Stock.	Actual Export
American..	87,557..	57,200..	35,880..	271,320..	3,415
Brazilian ..	3,245..	4,087..	1,090..	12,730..	30
Egyptian ..	12,088..	7,316..	2,710..	43,450..	172
W. Indian..	3,939..	1,109..	1,470..	16,740..	517
E. Indian..	2,841..	2,853..	5,280..	194,900..	2,936
Total..	109,670	72,565	46,430	539,140	7,070

The following are the official quotations from the same source:—

	G.O.	L.M.	Mid.	G.M.	M.F.
American	5¼*	5¼*	5 5/16	6¼	6

	M.F.	Fair.	G.F.
Pernam	—	6 1/16	6 1/16
Ceara	—	6	6⅛
Paraiba	—	6	6⅛
Maranham	—*	—*	—*

	Fair.	G.F.	F.G.F.	Gd.
Egyptian	6 5/16	6¼	6⅜	6½
Ditto, white	6⅛	6¼*	—	—

	Fr.	F.F.	G.F.	F.G.F.	Gd.	F.G.	Fine
M.G. Broach..	—	—	—	—	4 15/16	5 3/16	5½
Dhollerah	3 11/16	3 13/16	3 15/16	4 1/16	4 3/16	4 5/16	5
Oomra.....	4*	4⅛	4¼	4⅜	4⅜	4 13/16	5¼*
Bengal.....	—	—	3⅜	3½	3 15/16	4 1/16	4¼*
Tinnivelly	4¼*	—	4 11/16	5 5/16	5½	—	—

* Nominal.

YARNS.—With such a condition of the market for the raw material, as described above, it is only natural that we should find a dull trade here. Manufacturers, meeting with very little business, are buying nothing but what exigency compels them to buy, and where orders are running out it is no uncommon thing to find looms being stopped. Still the engagements of spinners are such that they very steadily maintain their prices, only few instances occurring of their making a concession. Consumers are yet in the position of having to press for delivery, and as long as this continues there will be little giving way to secure further business. Weft yarns are very firm, and command full prices for immediate delivery. Export yarns in the bundle are suffering neglect. Spinners, however, are fairly engaged, and prices remain steady. Here and there a small concession might be obtained to firm offers. Bolton yarns meet with a fair demand, and spinners steadily maintain their prices, which in the face of the considerable fall that has taken place in Egyptian cottons is putting them into a very satisfactory position. The finer counts are the most unsatisfactory feature of their trade, not standing so well as medium and lower ones.

CLOTH.—Very little enquiry has been reported in the cloth market, and no future orders of magnitude have been placed. The enquiry from India is dull, in shirtings, jaconets, and mulls. Prices, however, remain steady, producers preferring to stop machinery rather than make reductions in the face of the firmness of the yarn market. Best printing cloths are unchanged in value, whilst Burnley qualities remain in the previous unsatisfactory state, with here and there a development of stock. In the home-trade department a little more enquiry has been experienced, but it has not led to important transactions.

WOOLLENS AND WORSTEDS.

BRADFORD.

The rates offered for wools are not considered satisfactory, and although there is a slightly better inquiry for lustres the position of sellers is not considered encouraging. Short skin descriptions are in steady request. Botany growths are slow, fine tops being very quiet. Cross-breds also are quiet at unchanged rates. Alpaca quotations are firm, but the business passing is only limited. Yarns are slow, buyers being very difficult to deal with owing to their apparent want of confidence in the stability of the market. Mohair yarns in low numbers are inquired for. In pieces there is not much doing the United States sends a few orders but nothing of moment. Colonial houses are buying to a fair extent. Worsted coatings shew no improvement, and there is a large number of looms idle.

HUDDERSFIELD.

Business has not changed for the better, and buyers having been scarce in the local market. The trade passing is comparatively small, and operatives are not fully employed, owing to the poor demand for many classes of goods manufactured in this district. Low tweeds, serges, and fancy worsteds are chiefly in request, and is is on these goods that machinery running full time is principally employed. Canada is a good buyer, but the United States as well as the Continent are slow, and the inquiry is not up to the average. Wools are in moderate request. If anything the demand of late has fallen off somewhat. Quotations are firm.

ROCHDALE.

The cold spell that has prevailed gave an impetus to the sale of heavy goods, and stocks in the hands of merchants became reduced considerably. Manufacturers, however, have experienced so far little benefit from the change, as buyers are very conservative in their action. Hopes appear to be still entertained amongst producers that returns will be up to the average this year, but this is hoping for a good deal. Prices are unchanged, and the talk about manufacturers insisting on advances commensurate with the increased cost of production has so far been talk merely. The reports which have been published in various quarters as representing the condition of the flannel market here do not give a correct idea of the condition of the trade, and should be regarded accordingly with suspicion. Machinery is not fully employed, the desire being to limit the accumulation of stocks as far as possible. Yorkshire goods are firm, and sales have been fair. Wool is being bought more freely at previous prices.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 25th October, say:—

WOOL.—The wool market has shewn a good deal of activity this week, and some large transactions have taken place, both for home trade and export. The business doing has been chiefly in black-faced wools, although other kinds have also received some attention. Prices are firm.

SHEEP SKINS.—The supply has been a full average, and mostly of good sorts. Competition continues active, with a hardening tendency in values.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, 29th Oct., 1890.

The tone of our market is still flat. American advices are still against a recovery, and Calcutta still reports a large and good crop, with easy prices for jute.

Jute yarn is quiet, especially the lower qualities are less in favour. For fine qualities with colour, on the other hand, the unusual difference which has subsisted for some time is quite maintained.

The same remark applies to hessians, which in common qualities are all in the buyers' favour, while wide widths of the best goods are difficult to get at any reduction on late quotations.

Flax is without change. The holders of old crop are rather more anxious to sell, but for new the quotations of last week are maintained.

Flax yarns are not cheaper: indeed, for favourite spins full rates are paid to-day. Tow warps also, of the very best quality, are firm, while inferior yarn is almost unsaleable. The condition of the labour market is such that manufacturers are forced to use good warps, hence the fact that yarn of the second rate is not saleable.

In the pretty designs, both in printed and woven textures, Dundee begins to take a conspicuous and honourable place. In her fancy jute trade she is without a rival.

Twines, cords, and ropes are all in good demand.

Brechin, Forfar, and Fife looms are all engaged now till the new year in their various linen fabrics, and there is a healthy market for their increasing productions, both of household as well of table linens.

Dundee is busy in all the fancy jute goods, which form an important item in her manufactures.

To-day Mr. Gladstone paid a graceful and well-deserved tribute to the skill of the silversmiths of Dundee. He took occasion to commend highly the workmanship of the beautiful casket in which his burgess ticket is enclosed.

MANCHESTER.

No change of importance can be noticed. The yarns sold here are very firmly quoted, and buyers find that they have the weaker position. Linens are in average request. In the warehouses there have been some moderate sales, but manufacturers have not yet experienced any benefit. One or two of the leading buyers have been in the market, and purchases on account of United States and Canadian houses have been fairly extensive.

SILK.

LONDON.

THURSDAY.—London Produce Clearing House quotations of 5½ Tsatlee: November 11s. 10d., December 11s. 11d., January 12s., February 12s. 1d., March 12s. 2d., April 12s. 3d., May 12s. 4d. per lb. Sales registered, nil.

HOSIERY AND LACE.

NOTTINGHAM.

Our report this week can only be a repetition of previous statements in the main, no improvement of moment having taken place in the condition of business. Curtains in the lower grades are still moving freely, but the competition is keen, and profits are cut down to a very low ebb. Lace curtain manufacturers are hoping that their productions may, after all, escape the operations of the McKinley Tariff Act. Section 373 of the Act provides that "lace window curtains and other similar tamboured articles" shall be subject to 60 per cent. *ad valorem* duty. Importers of curtains contend that the use of the words "and other" excludes

curtains which are not tamboured from this section, and brings them under section 355, which relates to all manufactures of cotton not specially provided for in the Act. For these goods the duty is 40 per cent., and this would leave the tariff on curtains the same as before the passing of the Act.* The question will probably be taken into the Courts for decision. Some classes of fancy laces are selling to a fair extent, but the Levers department as a whole is quiet, and many frames are standing idle. There has not been much increase in the demand for silk laces, the most popular style being the Chantilly. Some fair orders for fancy laces for the South American markets have recently been placed. There is no new feature in the plain net department. The hosiery trade is quiet, but the colder weather will probably stimulate the home demand for winter goods.

Buyers of lace yarns have been placing orders to a moderate extent this week, qualities suitable for curtains being most in request. There is no quotable change in prices. Hosiery yarns have been selling rather more freely, some slight concessions having been made. The demand for silks remains below the average. Quotations for ordinary bobbin nets are unaltered, and there is no perceptible improvement in the aggregate of sales. The warehouses have been visited by a number of buyers, who are placing orders for fancy goods to a fair extent.

* The complete section reads as follows:—"Laces, edgings, embroideries, insertings, neck rufflings, ruchings, trimmings, tuckings, lace window curtains, and other similar tamboured articles, and articles embroidered by hand or machinery, embroidered and hem-stitched handkerchiefs, and articles made wholly or in part of lace, rufflings, tuckings, or ruchings, all of the above-named articles composed of flax, jute, cotton, or other vegetable fibre, or of which these substances or either of them, or a mixture of any of them is the component material of chief value, not specially provided for in this Act, 60 per centum *ad valorem*: *Provided*, That articles of wearing apparel, and textile fabrics, when embroidered by hand or machinery, and whether specially or otherwise provided for in this Act, shall not pay a less rate of duty than that fixed by the respective paragraphs and shedules of this Act upon embroideries of the materials of which they are respectively composed." "Section 355 reads:—Cotton damask, in the piece or otherwise, and all manufactures of cotton not specially provided for in this act, forty per centum *ad valorem*." We think that the Nottingham people are taking a very optimistic view of the prospects if they imagine that through a slip or careless wording in drafting the Bill they will be allowed to drive a figurative coach and four through the Act. The Bill was passed to exclude the goods as far as possible, and that intention will be carried out. The sooner Nottingham recognises the fact the better. Like a lot of other manufacturers those of Nottingham appear, like Micawber, to prefer waiting for something to turn up rather than boldly face the worst at once and try to override the difficulties by using their brains and working hard.—ED. *T.M.*

DRY GOODS.

MANCHESTER.

Colder weather at the beginning of the week resulted in an increased business in the heavy departments, and Tuesday was also a busy day for merchants. Vicunas and serges have been bought freely for men's clothing, and worsteds for the moment appear to have receded into the background. In shades greys have not been inquired for so freely, and beavers have come forward in their place. It is said that the demand for the latter is merely a West-End one, and that the greys and blues for other markets will as heretofore have the biggest run. But browns have moved off more freely here, apart from the West-End trade, and it would appear, therefore, that the change is more general than some people are willing to admit. No further news is to hand concerning the tweed syndicate, whose association with the Salt Union is regarded as decidedly odd. One of the largest Galashiels concerns has in the meantime formed itself into a limited liability company with a heavy capital. It would be necessary for any syndicate to take over this business if it could be bought. The lace trade is slow, the principal demand being for certain fancy curtains of Scotch make which have been introduced of late. There is nothing special to report in Nottinghams or Clunies. The former still sell well, especially in the low lines. This is an encouraging fact for manufacturers of the cheaper shades, who have hitherto been the great sufferers from the competition of printed muslins of Lancashire and Scotch make.

THE KIDDERMINSTER CARPET TRADE.

Business, so far as concerns the Brussels portion of this industry, can hardly yet be said to have reached a satisfactory point, and the anticipations with which October was looked forward to have only been partially realised. Notwithstanding this, however, considerable progress has been made during the month. Throughout the trade, machinery is finding better employment, and manufacturers' order-books have derived material advantage since the firms' travellers commenced to ply the country markets two or three weeks ago. Still, there is no denying the fact that spring orders are coming to hand at an unpleasantly slow rate, and manufacturers all round are awaiting a change in this respect with some anxiety. Buyers are reported to be holding off in the hope of obtaining concessions later on, but this hope will certainly lead to disappointment, as manufacturers were never more determined than they are at present to adhere firmly to their price lists. This determination is shared by manufacturers in the North of England and in Scotland; from these parts, too, business is reported as decidedly backward.

With the end of the labour strikes in Australia prospects of business in that colony brighten, and already those manufacturers who have been suffering in consequence of the difficulties and disturbances which have been taking place, begin to feel a change for the better.

For pile carpets of all sorts there is at present a strong demand, and in Wiltons, Royal Axminster, and Chlidemas, machinery is pretty fully engaged. The same remarks apply to rugs of a common or rather of a more general description. In all these departments production is much heavier than for some time past. The local wool market is without animation, and purchases are confined to consumtive requirements. Holders of the raw material are firm in their demands on the whole, but here and there some giving way has taken place, and this does not tend to an increase of confidence on the part of likely buyers. Spinners find more employment for their machinery, but in consequence of the backward state of the carpet trade new contracts are difficult to book, unless on too serious reductions and at prices which they cannot afford to listen to.

Joint Stock and Financial News.

COTTON COMPANIES' REPORTS.

PALM (OLDHAM).—Profit allows the directors to pay a dividend of 10 per cent. (half year). The share capital is £40,000 and loan £25,000.

COTTON HALL COMPANY (DARWEN).—Profit, three months, £815. Dividend, 10 per cent. per annum. 588 looms and 43,792 spindles.

SMALLBROOK (SHAW).—The profit is £1,130, and a dividend of 1s. 6d. per share or 7½ per cent. will be paid. The share capital is £56,000, and loan £142,802. The fixed stock is valued at £56,813, and there are 24,972 twist and 49,080 weft spindles.

PARK AND SANDY LANE (ROYTON).—The profit is £878, and a dividend of 1s. 9d. per share or 10 per cent. will be paid, placing £200 to reserve fund and carrying forward £120 to next quarter's account. The fixed stock is valued at £31,400, and there are 12,546 twist and 22,608 weft spindles.

WINDSOR (OLDHAM.)—The profit is £460, and a dividend of 10 per cent. will be paid, placing £200 to reserve fund. The share capital is £15,242, and loan £51,013. The fixed stock is valued at £32,032, and there are 14,712 twist and 22,956 weft spindles.

COLDHURST (OLDHAM).—The profit is £1,502 6s. 6d., and a dividend of 1s. 9d. per share of 10 per cent. will be paid, placing £600 to reserve fund. The share capital is £52,500, and loan £18,839. The fixed stock is valued at £55,720, and there are 49,380 twist and 12,000 weft spindles.

NEW COMPANIES.

ADAM L. COCHRANE AND BROTHERS, LIMITED.

Registered in Scotland by John Oswald, registration agent, Edinburgh. This company has a capital of £120,000, divided into 8,000 preference shares and 4,000 ordinary shares of £10 each. The office of the company is to be in Galashiels. Object, to acquire and take over as a going concern the business of woollen manufacturers now carried on at Netherdale, Galashiels, by Adam Lees Cochrane, Archibald Cochrane, and Walter Cochrane, co-partners under the firm of Adam L. Cochrane and Brothers, and the assets and liabilities of the firm; to carry on or continue in Great Britain or elsewhere, the business of manufacturers of Scotch tweeds, worsted coatings, and fancy woollen goods, etc.; to acquire or carry on any other business which the company may think desirable; to purchase or lease buildings, lands, and privileges, including patent rights and trade marks; to provide or erect factories and warehouses; to establish branches and agencies in the United Kingdom or abroad. The first subscribers are:—

	Shares.
A. L. Cochrane, manufacturer, King's Knowes, Galashiels	1
A. Cochrane, manufacturer, Abbotshill, Galashiels	1
W. Cochrane, manufacturer, Lynhurst, Galashiels	1
W. Rodger, manufacturer, Bridgelands, Selkirk	1
A. N. L. Cochrane	1
Helen B. Cochrane	1
Agnes Cochrane	1

The borrowing at any time shall not exceed £10,000 without the sanction of a general meeting. The number of directors shall not be less than three nor more than seven. The first shall be Adam Lees Cochrane, Archibald Cochrane, Walter Cochrane, and William Rodger. Qualification, a holding of £500. Remuneration, such sums as the company in general meeting may from time to time determine. The directors may appoint a managing director or directors, whose remuneration may be by way of salary or commission or participation in profits. Directors may be appointed for the management of the affairs of the company abroad.

SCHOOL-STREET MILLS MANUFACTURING COMPANY, LIMITED.

Registered by E. Snook, 32, Cromwell-road, New Southgate, with a capital of £5,000 in £1 shares. Object to carry on the business of weavers and manufacturers of cotton and woollen goods. There shall not be less than three nor more than seven directors. The first are J. Adamson, 20, Kirkmanshulme-lane, Longsight; J. C. Howarth, 103, Droylsden-road, Newton Heath; W. K. Wheatley, Grove House, Evesham, and T. H. Smethurst, 76, Windsor-road, Oldham. Qualification, 100 shares; remuneration, £50, divisible.

FARNWORTH HOSIERY COMPANY, LIMITED.

Registered by Woodcock, Rylands and Parker, 11, Lincoln's-inn-fields, with a capital of £25,000 in £10 shares. Object, to carry into effect an agreement made October 1, between Jas. Healey and Frederick Walmsley for the purchase of the goodwill, stock-in-trade, plant, etc., of the hosiery manufacturing business heretofore belonging to and carried on by James Healey and John Tonge Coope at Farnworth, Lancashire, and to continue and develop the same. The first subscribers are:—

	Shares.
J. Healey, 15, Bank-street, Farnworth	1
W. H. Higgin, Hall Chemical Works, Little Lever	1
T. Morgan, Farnworth	1
J. Leach, 60, Bridge-street, Bolton	1
J. T. Coope, Farnworth	1
J. C. Streddon, 60, Chorley New-road, Bolton	1
F. Walmesley, Bolton	1

The regulations of Table A, with slight modifications, apply.

Gazette News.

ADJUDICATIONS.

Harry B. Black, Church-gate, Nottingham hosiery manufacturer.

Robert L. Addyman, Stansfield Mill, Kirkstall-road, Leeds, cloth finisher.

Thomas Crabtree and Henry Crabtree, trading as Samuel Crabtree and Sons, Spring Valley Dyeworks, Failsworth, dyers.

RECEIVING ORDERS.

Thomas Crabtree and Henry Crabtree, Failsworth, dyers, Oldham.

PARTNERSHIPS DISSOLVED.

Lunn, Bates, and Hamer, Damside, Huddersfield, woollen cloth finishers.

J. E. and G. Whittaker, Spring Mill, Albert Mill, and Victoria Mill, all in Accrington, cotton manufacturers.

Reader and Kay, Phœnix Works, Cremorne-street, Nottingham, licensers of the patent automatic simultaneous scolloper, taper, and stitcher.

Beesley and Co., Spring Vale Rope Works, Darwen, rope and twine makers.

Benjamin Kilburn and Squire Kilburn, Market Hall, Huddersfield, stocking knitters.

Edward Hamer and Co., Tib-street, Manchester, manufacturers and merchants.

NOTICES OF DIVIDENDS.

F. Thornton, trading as Thornton and Co., Canal Bridge Mills, Leeds-road, Huddersfield, card-maker; 3½d., second and final.

Alfred Brooke, residing at 32, Cliff Terrace, Manningham-lane, and 2, Blanche-street, Laisterdyke, both in Bradford, woolstapler; 4½d., first and final.

SCOTCH SEQUESTRATION.

Thomas Gayne and Co., manufacturers, 97, Galowgate, Glasgow.

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.

20TH to 25TH OCTOBER.

16,634. G. F. EYRE, 4, St. Ann's-square, Manchester. Machinery to manufacture surgical lint and similar fabrics.*

16,642. A. SOWDEN, Central Chambers, Halifax. Looms.

16,660. J. MENZIES and G. MITCHELL, 32, Tivoli-road, Crouch End, London. Treating textile fabrics to render them sun and heat proof.

16,666. J. R. GEIGY, 89, Chancery-lane, London. Yellow dye.

16,700. A. F. WITHIN, 55, Chancery-lane, London. Ring traveller apparatus of spinning or twisting machinery.*

16,702. A. J. ROBERTSON, 1, Quality-court, London. Controlling the air about moving belts and machinery.*

16,732. A. WHOWELL and A. A. WHITLEY, 8, Quality-court, London. Machinery for hanging and drying textile fabrics.

16,751. W. LAIDLAW, Sunbridge Chambers, Bradford. Method of and apparatus for dyeing yarns, tops, and the like.

16,822. J. WATSON, 222, Grosvenor-road, Belfast. Jacquards for looms.

16,865. H. H. LAKE, 45, Southampton-buildings, London. Let-off mechanism for looms. (*J. Morton*, U.S.)*

16,868. J. Y. JOHNSON, 47, Lincoln's Inn-fields, London. New blue basic dye-stuff. (*Badische Anilin and Soda Fabrik*, Germany.)

16,870. E. SAUPE, 8, Quality-court, London. Figured pile fabrics and machinery or apparatus for their manufacture.

16,880. J. DESIRE RYO, A. M. RYO, and H. RYO, 53, Chancery-lane, London. Mounting and driving spindles of continuous spinning machines.

16,908. S. WHITWORTH, 17, St. Ann's-square Manchester. Shuttle tongues or pegs, and attaching same to shuttles.

16,911. H. BIRNBAUM and T. BIRNBAUM, 55, Chancery-lane, London. Waterproof fabrics, and other fabrics.

16,965. L. H. MARSDEN, W. A. ENTWISTLE, and W. BOURNE, 9, Royal-street, Ardwick, Manchester. Lubricating loom picker spindles.

16,967. A. NICHOLSON and J. HALL, 17, St. Ann's-square, Manchester. Throwing silk and machinery therefor.*

16,969. J. WELCH, 4, St. Ann's-square, Manchester. Tentering or stretching woven fabrics.

16,985. D. BARNETT, 62, St. Vincent-street, Glasgow. Treatment of textile vegetable substances to obtain fibres therefrom, and apparatus therefor.

17,014. W. J. BILLINGS and T. STARBUCK, 4, South-street, Finsbury, London. Knitted hosiery, and apparatus therefor.

17,056. W. J. ADAMS, 17, St. Ann's-square, Manchester. Cord and braid machine for producing certain trimmings.*

17,070. G. OLDHAM, 4, St. Ann's-square, Manchester. "Doctors" used in machines for printing textile fabrics.

17,085. J. WOOD, 38, Chancery-lane, London. Guide-eyes for the trap boards of spinning frames.*

SPECIFICATIONS PUBLISHED.

1889.

15,570. FALLOWS and HAWORTH. Preparing and spinning machinery. 11d.

15,842. LISHMAN. Looms. 6d.

15,983. OETZMANN. Floor-cloth. 4d.

16,494. PRELLER. Fringes, etc. 6d.

17,137. JOHNSON (*Burrows*). Ungumming flax, etc. 11d.

17,678. HARRISON. Knitting machines. 8d.

17,747. GRAEMIGER and ors. Dyeing, etc., yarn. 6d.

18,073. WILLCOX (*Farbenfabriken vorm. F. Bayer and Co.*). Dyeing and printing fibres. 4d.

18,305. LEBEGUE. Loom harness. 1s. 3d.

18,327. ROTHWELL, T. and J. W. Carding engines. 6d.

18,519. WILLCOX (*Farbenfabriken vorm. F. Bayer and Co.*). Colouring matters. 6d.

18,790. MILLER. Pressing and finishing textile fabrics. 11d.

18,915. WARBURG (*Van Nueffel*). Floor oil-cloth, etc. 8d.

18,946. CALVERT and CHAFFER. Purifying waste matters from dyeworks, etc. 6d.

19,014. WOODWARD. Knitting machinery. 11d.

19,170. STIVEY. Reeling yarns or threads. 8d.

19,190. MILLS (*Valansot*). Dyeing velvets, etc. 8d.

19,240. BARRACLOUGH. Scutching leaves of plants. 8d.

19,377. CLAY. Steaming, cooling, dyeing, etc., woven fabrics. 8d.

19,408. WEBER-JACQUEL. Dyeing, etc., yarn. 8d.

19,700. REVIS and ors. Rotary Knitting machines. 8d.

19,907. SANDERSON and DRAKE. Looms. 6d.

1890.

10,856. SILVERBERG and TETERING. Carbonising wool, etc. 6d.

11,838. BECKER. Plaited braid. 8d.

12,604. DRAPER and LYON. Spinning and twisting machines. 6d.

13,043. SCHMID and KOCHLIN. Humidifying air. 6d.

13,048. PITT (*Smith and Sons*). Dyeing apparatus. 11d.

13,682. TAYLOR. Looms. 6d.

13,775. LAKE (*Chase*). Cotton gins. 6d.

13,786. LAKE (*Chase*). Cotton gin-roller. 6d.

ABSTRACTS OF SPECIFICATIONS.

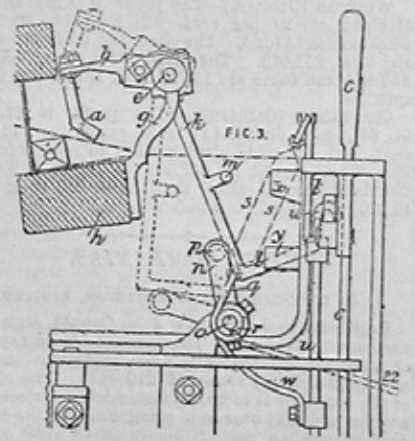
7,953. May 13, 1889. **Punching jacquard cards.** P. PEARSON and A. GODWARD, 28, Willoughby-street, Beeston, Nottinghamshire.

A sheet of india-rubber is held by cords which are looped over bars forming a frame adjustable in length and breadth. A pattern, designed in the ordinary way, is traced upon the india-rubber, which is then expanded or allowed to contract if desired. The sheet is then turned face downwards on to a perforated metal sheet to which the design is transferred. The pattern is then draughted on to the sheet by filling up the holes where required with a compound of flake white or other colour, gum arabic or other cement, and water, this compound, with the addition of glycerine, being employed for the tracing. When the metal sheet is dry, it is employed for operating the [selecting needles of the card punching apparatus. The Provisional Specification describes a machine in which the sheet acts on vertical needles, which set horizontal hooked needles acting through suitable devices on the needles of the selecting box of an ordinary jacquard card punching press. [8½d. *Drawings.*]

7,957. May 13, 1889. **Stamped velvet, etc.** C. HOLLENGER, 23, Jungfernweg, Crefeld, Germany.

The velvet, velveteen, or plush is passed before shearing between rolls, one of which is engraved with the pattern, preferably in relief, the raised portions presenting a roughened or granulated surface. The crushed parts are then wetted with a composition of gum tragacanth and gelatine or the like, or the fabric may be subjected to the action of vapour before being passed between the rolls. Low-pressure steam or vapour is then passed through the fabric from the back, whilst the front is acted upon by wire brushes. The uncrushed parts are then dressed down to about the level of the rest. [8½d.]

7,961. May 13, 1889. **Looms.** R. CHARNLEY, 2, Havelock-street, Preston.



Shuttle guard.—The guard rod *a* consists of a metal tube with a flat underside wing of sheet metal, and is carried by end arms *b* turning about pivots *c* on brackets *g*, which are secured to the front of the lay *h*. To one of the pivots *c* is connected a bent swing arm *k* pressed on by a finger *p* carried by an arm *n* on a pivot *o*. A belt *q* is secured to a boss *r* on the pivot *c* and to a spring *s* connected to a rod *t* on the brake lever rod *u*. As the lay moves forwards a finger *m* meets a fixed stop *x*, whereupon the arm *k* presses back the finger *p*, the guard *a* meanwhile moving into the position shewn by dotted lines; the finger *m* finally passes under the stop *x* until the finger *p* meets a stop *y*. On the return of the lay the parts resume their former positions. The guard rests on stops in its acting position, shewn in full lines. By operating the knocking-off handle C to stop the loom the brake lever rod *u* descends and a belt *w* pulls round the arm *n*, and the guard moves up out of the way by spring action. By pulling a belt 22 connected to the boss *r* the guard may be caused to rise when required. [8½d.]

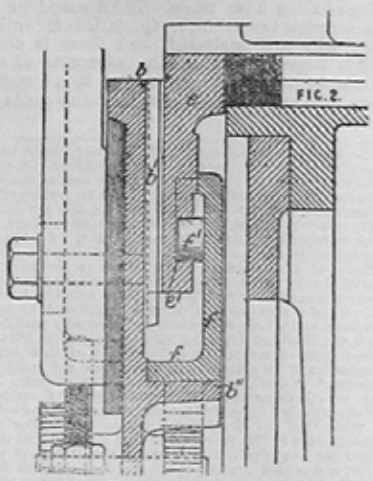
7,967. May 13, 1889. **Fabric.** A. J. BOULT, 323, High Holborn, Middlesex.—(*C. Coste; Paris, France.*)

Floss silk is coated with india-rubber, or like substances of any colour or shade. The fabric may be used as a substitute for leather, or as a waterproof fabric. [4½d.]

7,977. May 18, 1889. **Dyes.** S. PITT, Sutton, Surrey.—(*L. Cassella and Co.; Frankfort-on-Main, Germany.*)

Azo dyes. — Relates to the production of bluish-black colouring matters from the diazo-azo compounds obtained by the reaction of diazo-sulphoacids upon alpha-naphthylamine, and again diazo-tising as described in Specification No. 9,214, A.D. 1885. Consists in combining these bodies with a substituted metadiamine, or ameta-amidophenol. For example, the diazo compound of *a*-naphthylamine-disulphonic acid is combined with *a*-naphthylamine hchlorhydrate and the amidoazo product is azotised and poured into an alcoholic solution of tetramethyltoluylenediamine containing acetate of sodium. The dye-stuff, which crystallises out, dyes wool in a neutral bath containing common salt, a bluish black. In a similar manner the diethyldibenzyl-diethyldiphenyl-, and *a*-dinaphthyl-derivatives of *m*-phenylenediamine may be used. The amido phenols suitable are *m*-oxy-diphenylamine and *m*-oxy-methyldiphenylamine and their ethers and homologues. [6½d.]

8,009. May 14, 1889. **Spinning.** J. STOCKS and W. LORD, Canal-street Works, Todmorden.



Carding-engines.—The flats are guided and supported upon radial brackets *e* which take into guide ways *b*¹ formed in the bend *b*, and are adjusted radially by means of a ring *f* supported upon a flange *b*¹¹ on the bend, studs *f*¹ on the ring taking into inclined slots in the brackets. On moving the ring *f* by means of worm or other suitable gearing, the brackets are moved towards or from the centre as desired. The invention may also be applied to carding-engines in which the flats are supported on rotating wheels or discs. [6½d.]

8,097. May 15, 1889. **Spinning.** J. A. HART, Higher Bank, Blackburn, and C. BAYNES, Knuzden House, Blackburn.

In apparatus for regulating the thickness of the lap fed to or delivered from scutchers and like machines, a spring arrangement is introduced between the feed roller, etc., and the mechanism for operating the strap on the cone drums. These springs may be arranged variously. The lap may be caused to pass between blade springs and the feed roller, etc., the pressure being transmitted through the blade springs to the usual vertical levers connected with the strap-shifting mechanism. A pointer, etc., may be arranged for indicating the thickness of the lap, etc. [1s. *Drawings.*]

8,106. May 15, 1889. **Spinning.** V. SCHEVELIN, Balakhna, Russia, and P. MINDOVSKY, Moscow, Russia.

Processes.—The invention consists in utilising for the treatment of vegetable fibres the acid, neutral, or alkaline residues of naphtha manufacture. The plants are heated for from one to three hours at a temperature of from 70° to 95° C. with a ten per cent. solution of the residues having an alkaline reaction. They are then passed through rollers to extract the residue solution, and afterwards through rollers over which a stream of water flows to wash the plants, the last pair of rollers pressing the plants as dry as possible. If a light coloured fibre is to be obtained the plants are again heated, immediately before washing, to a temperature of 70° to 95° C. for a time not exceeding one hour with a ten per cent. solution of the residues, which has been previously saturated with sulphur dioxide. If a white or a coloured fibre is to be obtained the plants are treated also with bleaching or with dyeing materials. The residues may be obtained from the mineral oil factories, or they may be prepared in the following manner:—The mineral oil distillates or the mineral oil itself is mixed carefully with five to twelve per cent. by weight of sulphuric acid, and allowed to stand. The mineral oil, floating on the surface, is removed from the acid residue beneath, neutralised with alkalies, and again allowed to stand when the soda residue will separate out. This process may be repeated on the mineral oil, a little chromic acid being added to the sulphuric acid until almost the whole of the oil is converted into acid and soda residue. The acid residues always contain free sulphuric acid, which is removed by repeated washings with hot water, or by treating with steam, and then neutralising with an alkali. When the residues contain unconverted mineral oil they are first carefully washed with warm or hot water. [6½d.]

8,107. May 15, 1889. **Cleansing; bleaching; mordanting.** V. SCHEVELIN, Balakhna, Russia, and P. MINDOVSKY, Moscow, Russia.

Relates to a process for cleansing and bleaching fibrous substances and fixing organic colouring matters thereon. Consists in treating the materials with acid, neutral, or alkaline residues of naphtha manufacture, or analogous substances obtained by alternately and repeatedly heating mineral oil, or distillates therefrom, or coal-tar oil, with sulphuric and with caustic alkali. Acid and soda residues are thus obtained. The former, when neutralised, are used for cleansing dirty and very greasy fibres. For bleaching and for fixing colouring matters they are purified by converting into lime compounds, removing unconverted mineral oil,

dissolving out the lime with dilute acid, and then saturating with alkali. The soda residues are used directly for cleansing, but for bleaching purposes they are saturated with sulphur dioxide until acid, and for dyeing with organic colouring matter the unconverted mineral must be first removed. The cleansing and bleaching process, as applied to flax, hemp, and cotton fabrics, consists in boiling the materials with a solution of the residues for several hours, discharging the liquor for use with a fresh quantity of material, boiling with residues saturated with sulphur dioxide, pressing, washing, beating in a bath of bleaching powder and bicarbonate of soda, rinsing and drying. The residues are also used for washing wool and woollen fabrics and silk. A combined cleansing, bleaching and dyeing process is carried out by boiling the material direct from the loom with a mixture of soda residues and organic colouring matter, and subsequently passing them through warm solutions of lime, aluminum or other salts for fixing the colouring matter. [8½d.]

8,124. May 16, 1889. **Spinning.** D. S. Ingham, Highgate-terrace, Dewsbury.

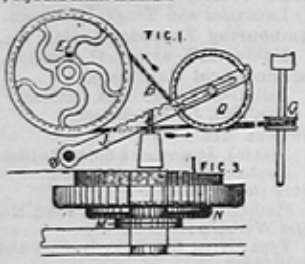
Rag-tearing machines.—In order to avoid the necessity for altering the length of the driving band when differently sized pulleys are used, the machine is mounted so as to be movable longitudinally upon the bed plate, and is adjusted thereon by means of a screw arrangement, or by worm or rack and pinion, or other suitable gearing. [6½d. *Drawings to Specification.*]

8,127. May 16, 1889. **Spinning.** J. Thompson (Messrs. Curtis, Sons and Co.), and T. Barker, Phœnix Works, Manchester.

Carding-engines.—The card clothing is secured to the flat without drilling the latter, and without the use of metal clips embracing the edges of the flat. A metal strip, a little longer and wider than the flat, is soldered or otherwise secured to it, and the ends and sides are bent upwards. The card clothing is cut a little narrower than the flat and laid upon the metal strip, and the bent-over edges of the latter are forced into the foundation, which is simultaneously stretched by means of a pair of hinged jaws, the hinge of which is forced downwards in order to press the jaws outwards. The ends of the strip may be bent over and clinched by a hand tool or otherwise. The strip may, however, be made of the same length as the flat, a narrower strip of metal being placed over each end of the card clothing and clinched beneath the bent-over ends of the strip. Three arrangements of apparatus are described for bending over and clinching the edges of the strip. [8½d. *Drawings.*]

8,153. May 16, 1889. **Spinning.** E. J. and A. D. Oates and W. Earnshaw, Ryburn Mills, Halifax.

Spindles and their appurtenances.—Each pair of spindles is driven by a band B, which takes round the two wharves C, passes under a tension pulley D, and thence over a driving pulley E on the driving shaft. The pulley D is adjustable in a slot H in a weighted lever J. For obtaining a drag upon the bobbins in roving, etc. frames, two washers are used, one M of cloth, and the other N of metal, the latter having its edges turned up to engage with the end of the bobbin. 6½d.



8,154. May 16, 1889. **Spinning.** E. J. and A. D. Oates and W. Earnshaw, Ryburn Mills, Halifax.

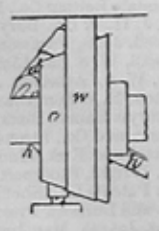
Spindles, lubricating.—The spindle is surrounded by a lubricating cup containing an absorbent pad and provided with a loose perforated cover. 6½d. *Drawings.*

8,156. May 16, 1889. **Amidophenols.** H. H. Lake, 45, Southampton Buildings, Middlesex.—(*Messrs. Wirth and Co., Frankfort-on-the-Main; Agents of A. Leonhardt and Co., Mulheim-on-the-Main, Germany.*)

Consists in preparing metamidophenol, or alkylised derivatives thereof, by heating resorcin with ammonia, or with fatty amines, in the presence or absence of their salts. The Provisional Specification also describes the use of aromatic amines, in which case it is necessary that the salts of such amines should be present. 4½d.

8,216. May 17, 1889. **Looms.** C. Jones, Glebe House, and R. Tyson, Laurel House, both in Pateley, Staffordshire.

In looms for weaving curved or fashioned combined waist-bands and skirt bindings, the webs *w* are taken up between a pair of conical guide and stretching rollers *a*, *b*, passing thence through a slot *g* in the breast beam and between the conical rollers *c* and *d* to the receiving box. The roller *d* is pressed against the roller *c* by a weighted lever A. In conjunction with this arrangement is employed the usual differential let-off motion, which gives the required tension to the warp threads. [8½d.]



8,220 May 17, 1889. **Combing machines.** T. Barrow and T. H. Shaw, Wapping Shed, Bradford.

Comb circles and steam chests.—The steam chests are made in sections independently of the bed plate. The sections are connected together by pipes and are separated from the bed plate by non-conducting material, and connected thereto by bolts. Between the sections are adjustable blocks or guide pulleys, the faces of which take against the plain and turned side of the rack flange of the comb circle, which is thereby guided in a true circular path. The sections of the steam chests may themselves be adjustable on the bed plate and form the guides for the comb circles, or the steam chest may be made in one piece, but in an incomplete circle, the ends of the segment having flanges connected by adjusting screws. [6½d. *Drawings.*]

8,177. May 16, 1889. **Bleaching.** M. Hermite, E. J. Paterson, and C. F. Cooper, Pownall-road, Dalston, Middlesex.

Relates to the manufacture of a bleaching and disinfecting liquor. Consists in mechanically separating that part of the mineral "Carnallite," which consists of a double salt of magnesium and potassium chlorides, and subjecting it to electrolysis. During this process a certain quantity of magnesia is set free rendering the liquor alkaline. The electrolysis may be carried out while the liquid is circulating through the materials to be treated. 4½d.

8,205. May 17, 1889. **Spinning.** S. Wilkinson, 38, Hirst-street, J. Clarkson, 67, Waterloo-road, and F. Heap, Todmorden-road, all of Burnley.

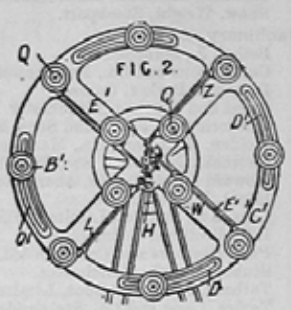
Spindles and their appurtenances.—Various arrangements of springs are described for securing the bobbins of ring frames to the spindles. In one arrangement the usual cup is slit vertically and provided with an internal bead, which takes into a corresponding groove formed in the lower end of the bobbin, which may be provided with a metallic hoop. [8½d. *Drawings.*]

8,206. May 17, 1889. **Looms.** W. Ineson, Carlinghow, Batley.

Healds, guiding.—A series of guide rods, laths, etc., arranged between the healds are mounted loosely on shafts carried by brackets. [6½d. *Drawings.*]

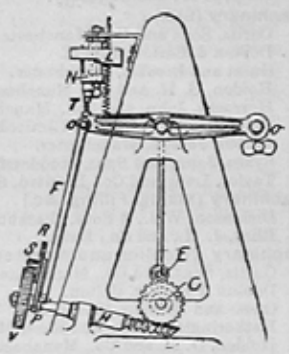
8,237. May 7, 1889. **Drying yarns etc.** T. Parkinson, Canterbury-street, Blackburn.

Hanks in the process of mordanting or after dyeing are each stretched over two rollers Q, carried by one spoke E1 of one of two whe-ls C1 on the shaft B, and over one roller B1, adjustable in a slot D1 in the rim of the wheel. The rollers Q are rotated by worm and bevel gearing L, T, W, Z from a shaft H, which is itself driven from a fixed spur wheel concentric with the shaft B. 6½d.



8,253. May 17, 1889. **Tulle or bobbin-net frames.** A. D. Thibion, 23, Boulevard de Strasbourg, Paris.

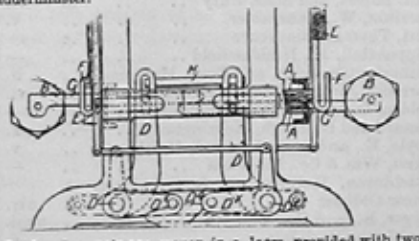
The speed of the taker-up beam C is regulated by a small roller E, which rests upon the fabric and is connected by levers to a disc cam L. This cam acts upon an abutment N, which carries an adjustable stop-screw T to regulate the oscillation of the lever O. The rod F is connected to a cheek P, loose on the driving worm-shaft H, and carrying pawls to engage with a ratchet wheel R, which communicates motion to the shaft H through the spur-gearing S, V, the ratchet wheel R and spur wheel S being fixed together and mounted upon the cheek P. 8½d.



8,260. May 17, 1889. **Woven fabric.**—J. J. Ashworth, 35, Mosley-street, Manchester.

The fabric is woven with a woollen weft and cotton, linen, or other warp, the wool being brought mainly to one surface and the cotton or linen to the other in "satin face" fashion. The fabric is milled, scoured, and stoved, if required, it being finished practically in the same way as ordinary flannel. A striped pattern may be introduced, and the fabric may be printed on one or both sides. The fabric is applicable for shirtings, sheetings, underclothing, dress goods, and the like. 4½d.

8,261. May 17, 1889. **Weaving carpets.** H. Fawcett, Kidderminster.



Bordered carpets are woven in a loom provided with two jacquard cylinders B, carrying cards for the border and body portions respectively, and put in and out of action alternately. The cylinders act on the opposite ends of needles A, which are returned as the cylinders recede, by levelling-up boards E held in swinging hooked arms F. The cylinders are carried by slide-bars C, operated from cam-worked levers D, from the shafts D1 of which the arms F are worked by suitable link-work, etc. A catch D_4 is made to engage with one or two arms Dx on the shafts D for holding the corresponding cylinder out of action. The boards E may be lifted out of the way when not required to be in action. The lifting board H is formed with slots extending from both sides, or from one side only of the holes for the cords, the cards being punched to suit. 8½d.

8,264. May 17, 1889. **Dyes.** H. H. Lake, Southampton Buildings, Middlesex.—(*Messrs. Wirth and Co.; Frankfort-on-the-Main, Agents of A. Leonhardt and Co.; Mulheim-on-the-Main, Germany.*)

Relates to the manufacture of blue-black colouring matters. Consists in acting with salts of nitroso compounds of tertiary aromatic amines upon meta-oxy-diphenylamine or its homologues. For example, hydrochlorate of nitroso-dimethylaniline and meta-oxy-diphenylamine, in the proportion of three molecules of the former to one of the latter, are heated in the presence of alcohol until the nitroso compound disappears; the spirit is then distilled off, the mixture is slightly acidulated and filtered, and the colouring matter is precipitated by means of common salt. Nitrosodiethylaniline may be substituted for nitroso-dimethylaniline, and for meta-oxy-diphenylamine may be substituted meta-oxy-phenyltolylamine, meta-oxy-phenylxylylamine, or ethoxymeta-oxy-diphenylamine. 4½d.

8,291. May 18, 1889. **Knitting.** C. J. Miles, 33, Gladstone-street, Leicester, and W. Spiers, 36, Burners-street, Leicester.

Circular machines.—The needles are mounted on plates or jacks, whose ends work in grooves in a cylinder concentric with the needle cylinder. They are raised by a cam ring, and are depressed by a cam, both cams being rotated or reciprocated simultaneously by toothed wheels. The jacks for the fashioning needles are made with projections to extend different distances from the needle cylinder, so that a needle is put out of action at each side alternately by moving the depressing cam radially outwards. During reciprocatory knitting the traverse of the thread-carrier is restricted by stops on the jack-cylinder, which engage with a sliding plate on the thread-carrier plate.

Straight-bar machines.—A similar arrangement of jacks and fashioning apparatus can be used. 8½d. *Drawings.*

8,299. May 18, 1889. **Dyes.** R. Willcox, 47, Lincoln's-Inn Fields, Middlesex.—(*The Farbenfabriken vorm. Friedr Bayer and Co.; Elberfeld, Germany.*)

Azo Dyes.—Consists in combining the diazo compounds of the amidobenzoic, amidohydroxybenzoic, amidocresolcarbo, amidophthalic, amidosulphobenzoic, amidosulphosalicylic, amidosulphocresolcarbo, and anisic acids, with amines, phenols, or the sulpho or carbo acids thereof, for example, salicylic acid, cresolcarbo acid, the dioxynaphthalenes, and the alpha and beta-napthol carbo acids. The above diazo compounds may first be combined with alpha-naphthylamine, again diazotised, and then combined with the amines, phenols, or their sulpho or carbo acids. Examples: (1) A yellow dye-stuff is obtained by diazotising amidobenzoic acid, adding the soluble diazo compound to an acetic acid solution of salicylic acid cooled by ice, neutralysing with soda lye, allowing to stand, and salting out; (2) a brown product is obtained by diazotising amidosalicylic acid, running the diazo compound into a hydrochloric acid solution of alpha-naphthylamine, adding sodium acetate, heating to 50° C., filtering, dissolving in alkali, again diazotising, acidulating with hydrochloric acid, adding the diazo compound thus obtained to an acetic acid solution of salicylic acid, and neutralising with soda lye. The Provisional Specification also describes—(1) the use of the carbo and sulpho acids of amidonaphthalene and amidonaphthol as the initial acids; (2) the preparation of colouring matters similar to the above containing two molecules of naphthylamine; and (3) the preparation of amidosulphosalicylic acid, and the amidosulpho derivatives of meta- and para-oxytoluic acids by nitrating and reducing with zinc dust. 8½d.

8,326. May 20, 1889. **Looms.** I. Hellas, Morley, near Leeds.

Double lift harness or dobbies.—To each pair of lifting hook A there is connected one neck band D by means of a double loop piece B. When one hook is raised the piece B slides up the other. 6½d.

8,335. May 20, 1889. **Knitting.** G. Sowter, 83, Clarendon Villas, Robin Hood Chase, Nottingham.

Hose, half-hose, and socks are made completely with one seam or join from the top to the toe and on one machine of the rotary or "Cotton" type. The seam may be either at the back of the leg, and bottom of the foot, or at one side of the leg and foot. In the second case, the foot and instep may be made with separate thread-carriers. 6½d. *Drawings.*

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Hart, Thomas, Blackburn .. .. .. —
Heppenstall, E., Huddersfield .. .. .. —
Hetherington, John, and Sons, Manchester .. ii.
Horrocks, John, and Son, Manchester .. .. vi.
Holden, G. H., and Co., Manchester .. .. —
Howard and Bullough, Accrington .. .. x.
Hoyle, E., and Sons, Limited, Halifax .. v.
Hurst, Wm. & Co., Rochdale .. .. .. —
Hutchinson, Hollingworth & Co., Dobcross, near Oldham .. .. xiv.
Jagger, E., and Co., Oldham .. .. .. xviii.
Kay, John, Rochdale .. .. v.
Lancaster and Tonge, Pendleton .. .. i.
Lees, Asa, & Co., Limited, Oldham .. .. —
Livesey, Henry, Limited, Blackburn .. .. ix.
Lord Brothers, Todmorden .. .. .. xvii.
Lupton Brothers, Accrington .. .. .. viii.
Matthews and Yates, Manchester .. .. xviii.
McMurdo, James, Manchester .. .. .. —
Makinson, E. & W. G., Preston .. .. —
Meredith-Jones, J., and Sons, Wrexham .. vii.
Musgrave and Sons, Ltd., Bolton .. .. —
Nasmith, Joseph, Manchester .. .. .. xii.
Orme, G., and Co., Oldham .. .. .. —
Pemberton and Co., Burnley .. .. .. xii.
Pickles, Robert, Burnley .. .. —
Platt Brothers and Co., Ltd., Oldham .. .. iv.
Reddaway, F., and Co., Pendleton .. .. i.
Renshaw and Co., Manchester .. .. .. —
Rossendale Belting Co., Manchester .. .. xviii.
Riley, J. H., & Co., Bury .. .. .. iii.
Rothwell, John, Farnworth .. .. .. —
Rothwell, W. & Co., Limited, Bolton .. .. —
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Rushton, E., & Son, Blackburn, & Manchester vii.
Salisbury & Hamer, Blackburn and Manchester vii.
Sampson and Co., Stroud .. .. .. xv.
Schofield and Kirk, Huddersfield .. .. —
Shaw, Wright, Stockport .. .. .. viii.
Smith Patents Co., Sheffield .. .. .. —
Stone and Burnett, Preston .. .. .. —
Stubbs, Joseph, Manchester .. .. .. xi.
Sykes, John, & Sons, Huddersfield .. .. —
Tatham, John, and Sons, Limited, Rochdale .. xvi.
Taylor, Lang, & Co., Ld., Stalybridge .. .. xiii.
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Type Writer Co., Ltd., London & Manchester .. vii.
Unsworth, Geo., Manchester .. .. .. —
Wallwork, Henry, & Co., Manchester .. .. —
Walton and Halstead, Hebden Bridge .. .. —
Wells, M., & Co., Manchester .. .. .. v.
Whiteley, John, and Sons, Halifax .. .. —
Whiteley, Wm., & Sons, Lockwood, Huddersfield vii.
Wilson, Bros., Cornholme, Todmorden .. xii.