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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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.

THE WAGES QUESTION IN BOLTON.

The mischievous influence exercised by arrogant trades-union leaders, and the little consideration they shew for the interests of their clients, has rarely been more conspicuously exhibited in a small way than during the last week in Bolton. Our readers are well aware that in both that town and Oldham applications have been made for an advance of wages, owing to the alleged profitable condition of trade as shewn by the large margin now existing between the cost of the raw material and the selling price of cotton. We have pointed out the unstable character of this margin and the strong presumption that very little has been realised as yet, and that there is small likelihood of much of it being obtained in the future. We are glad, however, to see that both the Oldham and Bolton employers, upon consideration of the subject, have concluded to grant the application almost to the full extent. In connection with the matter, a conference took place on Monday afternoon, at Bolton, between representatives of the Master Cotton Spinners' Association and the joint committee of the Operatives' Association. The spinners asked for 5 per cent. advance as from the 19th December, and the card and blowing-room hands made a similar demand, with the exception that 10 per cent. was asked for the males. This is practically identical with the demands made at Oldham, the only difference being as to the date when it was to come into operation, Mr. Fielding, J.P., the operatives' secretary at Bolton, asking or rather demanding that the advance should date from the 19th inst., although Oldham is content to have it from New Year's Day. In Oldham the employers have granted an all-round advance of 5 per cent., and the Bolton employers have done the same, to commence from January 1st, with a minimum of 1s. 6d. per week to the card-room male hands. But these offers were rejected, and the operatives, it is said, will leave work as per notice on the 18th and 19th of December. Further complications, it is alleged, may arise if the hands do get into the street, the spinners threatening to go in for another 5 per cent. The action of the employers' committee, we are told, is regarded by the operative spinners as mere splitting of hairs, there being only really eight working days between them on the question. On the other hand, the employers say they should not be asked to do more than the Oldham employers have agreed to, that is a concession of 5 per cent. from January. But if the action of the employers is tantamount to hair splitting, how must we regard that of the operatives and their secretary? To do what they threaten to do would be to sacrifice £30,000—nearly a week and a half's wages—for the sake of £1,500, which is approximately about the amount of the advance. But why is this demand made on behalf of the Bolton employés? Has it been really made in the interest of the working classes of Bolton? We must be permitted to doubt it. Has it not rather been made to gratify the *amour propre* of Mr. Fielding, J.P., who wishes to demonstrate to the industrial world how much cleverer he is than his confreres in other districts, and especially those of Oldham? If this be the real motive, does it not afford an instance of the wild recklessness with which the interests of working people are played at football with by their servants? We think so.

LANCASHIRE MEN AND FRENCH FINANCE.

A company has just been formed at Paris under the name of "The Cotton Company of the East," with a capital of three million francs. Its objects are particularly the construction of new cotton mills, the working or acquisition of those constructed by others, the purchase and sale of cotton wrought and unwrought, and generally all operations connected with the industry of cotton spinning. The members of the Board of Management are M. Badin, spinner, of Barentin, (president); Mr. W. R. Moss, spinner, of Bolton; Mr. J. Barber, spinner, of Romiley; Mr. J. B. Ross, merchant, of Manchester; Mr. L. Humbert, manufacturer, of Eloyes; Mr. C. S. Lings, merchant, of Manchester; and M. J. Garcin, merchant, of Paris. The company is established for twenty-five years.

GREAT EXPECTATIONS REGARDING RAMIE.

A French professor has great hopes as to the future of ramie. If it were cultivated in the French colonies it might, he thinks, deliver France from her present heavy obligations to other countries for textile materials. Whatever we may think of these conclusions we cannot but note with interest the facts on which they rest, assuming of course that they have been correctly stated. Experiments have been made at the suggestion of the French government for the purpose of ascertaining the relative excellence of different fibres. According to one series of experiments it was found that Russian hemp supports without breaking a weight of 80 kilos., Chinese ramie a weight of 125 kilos., and ramie of Annam a weight of 160 kilos. According to another series of experiments the traction capacities of ramie, hemp, flax, silk, and cotton were found to be represented by the figures 100, 36, 25, 13, 12; their elasticity by 100, 75, 66, 400, 100; and their capacity for torsion by 100, 95, 80, 600, 400. Another important property of ramie is its incomparable power of resisting the action of the atmosphere and of damp, which renders it peculiarly suitable for the manufacture of ropes and sail-cloth.

RADFORD SHIPMENTS TO THE UNITED STATES.

The tale from Bradford is still a cheerless one as far as the American trade is concerned. The exports last month were valued at £116,564, as against £391,321 in the corresponding period of 1889. As far as textiles are concerned the decline may be spoken of as general. Worsted coatings have fallen from £122,000 to £24,000, and stuffs have dropped from £149,000 to £5,000. Carpets and rugs shew a very marked decrease. The totals of all classes of goods exported from the consular district of Bradford were over £270,000 less last month than in November, 1889. What this means to Bradford everyone acquainted with the trade of the town will know. Here in Manchester we are practically independent of the United States, so that we have not felt to any appreciable extent the operation of the McKinley Bill.

ANCIENT PERUVIAN TEXTILES.

The law which governs the development o the child into the man is shewn to have been at work in past ages in the gradual development o extile art. Just as, when children of from three to six years of age try to draw they single out for notice the most striking peculiarities of personal appearance—the eyes, the nose, the teeth, and the fingers—neglecting all proportion, so the first artists acted who lived and wrought when the race, or at least their nation, was in its childhood. These remarks can be illustrated from the textiles of ancient Egypt, and from those of Peru. As the latter are less known than the former which have often been discussed, a few facts regarding them from the pen of a competent observer will not be unacceptable to our readers. "Only one of the Peruvian textiles which I have inspected," he writes, "exhibits a decoration from the vegetable world, and that not as an ornament proper, but as the representation of a votive offering. Nowhere else have I found any trace of a leaf or flower. The first impression made by these Peruvian decorations is that they consist solely of geometrical lines, combined with the figures of animals and human beings. On closer examination, however, we find that the geometrical lines are mostly parts of animals. A line with zigzags means a wing with feathers. A pointed square with a few divisions and dots is a face. . . Heroes are depicted with sceptre, bow and arrow in one hand, and the head of the slaughtered foe in the other; while of sense of beauty in such figures there is not a vestige, and only the harmonious colouring reconciles us to its absence."

WEIGHTING: A CURIOUS FACT.

With reference to the remarks which appeared in *The Textile Mercury* last week concerning the Continental practice of silk weighting and the condemnation it receives at the hands of English firms, it is rather strange that foreign cotton manufacturers should ascribe their inability to compete with their British rivals to reasons precisely similar to those which are brought forward by Macclesfield men when they are asked to explain the cause for the existing depression in their trade. Both excuses are invalid. The Lancashire cotton manufacturer who sells a piece of heavily-weighted calico is not deceiving the buyer, who knows what he is getting, and in fact prefers it to unsized material. And the same remark applies to the foreign manufacturer of weighted silk goods, who is simply acting in accordance with the wishes of his customers and deceives no one in offering for sale fabrics the dyes of which are heavily loaded. We emphasised this fact last week, and only draw attention to the matter now to illustrate the above curious point in connection with the staple product of this district. The cotton trade, which contains skilled dyers, finishers, and "weighters" (if we may employ the term), is able to hold its own in the face of competition of the severity of which Macclesfield can form no idea from its own experience.

WHO SHALL FIGHT THE WAGE BATTLES OF THE COTTON TRADE?

Our Oldham correspondent writes:—"The title of this note has been suggested by some remarks made at Oldham in connection with the wage question which has been agitating the mind of the hard-headed Oldhamers. There seems at present to be a strong inclination on the part of cotton mill workers in other spinning districts to be regulated by Oldham, and to rise or fall with it, so far as wages are concerned. This tendency of affairs—that Oldham shall be the battle-ground for the cotton trade—has caused considerable uneasiness amongst cotton spinners in Oldham, who have, therefore, set themselves the task, if it be possible, of diverting the current in another direction, and in effect they declare that the town shall not be made the scape-goat of the trade. At recent conferences of operatives' representatives with the committee of the Oldham Master Cotton Spinners' Association this subject was lightly dealt with, perhaps mainly with the object of ascertaining the views of the operatives on the question. The operatives frankly stated that they intended only to deal with the committee, and that they knew no other body, and pointed out that already other districts were bound by the action of Oldham, and the other towns were giving in their adhesion to be regulated in like manner. The question then resolves itself into this—Shall Oldham fight for the trade? Oldham employers say 'No.' At the meeting on Friday night, the 28th ult., when it was unanimously resolved to grant the 5 per cent. advance, complaint was made of the luke-warmness of the United Cotton Spinners' Association in attacking the wages question, and strong representations were made that the matter should be pushed forward by a central body undertaking the work on behalf of the trade. Further, it was said that if it became a question of Oldham against other districts they had implicit confidence in Oldham brains and go-aheadness and machinery, and that they would win in the long run. So that it would appear we have reached a crisis. On the one hand, it is said where the battles must be fought, and on the other, that Oldham shall not be the battle-ground, and that it must be elsewhere. Then, we ask the question, Who shall fight the battles of the trade? Oldham answers that they must be fought by the employés through a central body, and that rightly the task should be undertaken by the United Cotton Spinners' Association. Oldham spinners hold strong views on the necessity of this, and some even go so far as to say that what Oldham says to-day Lancashire echoes to-morrow. Be that as it may, the question here presented, although not a new one, will have to be faced by those engaged in the spinning industry. Already a decision to include the regulation of the workpeoples' wages as within the sphere of the United Cotton Spinners' Association has given rise to considerable dissension. It is felt, however, that compared with the operatives, the employers occupy a very weak position indeed, and that their organisation requires thoroughly overhauling and placing on a better basis. It is pointed out that the workpeople possess two powerful amalgamations, which the large central funds contributed to by members of the trades-unions in the four counties of Lancashire, Yorkshire, Cheshire, and Derbyshire, and in this connection the employers are compared to a regiment of soldiers sent on to a field of battle short of ammunition, and yet they are expected to be victorious. It is asked, Is it fair that Oldham private spinners and limited spinning companies should find the means to fight wages questions, and to suffer the necessary losses, while employers in other districts are in full swing and making all the money they can at the expense of Oldham? Further, the fact is pointed out that the operatives, in case of strikes, are subsidised from the central fund, and if found necessary, levies are made upon members in other districts to continue the strike pay. Spinners are asked to compare the two positions, and appeals are made to their spirit of fair play between man and man. We simply place these respective views before our readers, and especially the spinning portion, so that they can calmly weigh them over and fully consider their importance. While we acknowledge the peculiar position occupied by spinners, we still hold to the opinion that if the committee of the United Spinners' Association, or for that matter other influential members in the trade, were to devote their energies to devising a sliding scale by which wages could be adjusted and rise or fall according to ascertained facts which could be agreed upon as a basis, they would confer great blessings upon an industry which is admitted even by the operatives themselves to be beset with many difficulties. By the adoption of such a plan—which is not an impossibility—much of the friction now existing and also the heartburnings between spinners in this or that district, would be done away with or at least avoided. Then employers and operatives more than ever would co-operate in the bringing about of enactments which would be beneficial all round and make the work of those engaged in the trade run smoother. Yet while we desire to see this accomplished, we should not lose sight of the fact now agitating so much the mind of the Oldhamer. The great weakness on the side of employers is want of confidence in each other—the sinking of their differences—the want of cohesion. Let them boldly face their present position: and if they will we are firmly convinced they will never regret it."

THE M'KINLEY TARIFF AGAIN.

Of course the sentiments expressed by President Harrison in his recent message respecting the new tariff are only what might have been expected from such a source. To brush away all foreign criticism as being of no concern to Americans is a very easy way of getting rid of arguments that cannot be answered, but such a process can hardly, with any show of decency be applied to the practical criticism offered by the voice of the American nation, which has relegated the author of the new tariff and a large number of his supporters into well-merited obscurity. We are glad to see that no time is to be lost in making an endeavour to repeal this piece of legislative iniquity. On Monday, in the House of Representatives, Mr. Wike, Democratic Congressman, from Illinois, introduced a preamble and resolution with respect to the tariff. The preamble says:

It is manifest that the people of this country at the recent election most emphatically repudiated the policy and the principles of taxation by protection embraced in the McKinley Tariff Act, and by an overwhelming majority unmistakably demanded lower taxes and cheaper prices for the necessaries of life.

The resolution instructs the Committee of Ways and Means to report Bills repealing any and all increases in rates and tariff duties occasioned by the McKinley Act, and place upon the free list wool, lumber, salt, coal, ores, dye-stuffs, tin plates, binding twine, bagging, cotton ties, and such other articles and raw materials as the Committee may deem of like importance to the people; such Bills to provide for the carrying out of the reductions occasioned by putting such articles upon the free list. The resolution further instructs the Committee to report a Bill providing for the raising of additional necessary revenue by graduated taxation upon the incomes of persons, corporations, trusts, and associations exceeding 1,000 dollars. It is not likely that this resolution will get through the Senate, and afterwards successfully run the gauntlet of the President's veto, but it constitutes a vocal expression of the nation's desires, to which ultimately due effect must and will be given, despite all the opposition that can be brought to bear by the "Rump" of the Republican Party.

TEXTILE ARCHÆOLOGY IN GERMANY.

The well-known writer on textile subjects, Friedrich Fischbach, gives some interesting details in a Continental contemporary about the rise and development in Germany of what may be called textile archæology. He regards Gottfried Semper as the theoretic pioneer of the movement, and as its practical pioneer, although at first only in the liturgical department, Dr. Fr. Bock, of Aix-la-Chapelle, to whose talent as a collector most of the museums of Europe owe their textile treasures. When, thirty years ago Dr. Bock first exhibited old fabrics and representations of them in Berlin, he was derided in the newspapers for attempting to make Protestant Berlin Catholic by means of mass vestments from Rhenish vestries. Now, however, the tone of public opinion is quite changed in this respect, and the capital of the German Empire is proud of possessing the largest collection of textiles of its kind in the world in its museum of art and commerce, which last winter exhibited in groups about 11,000 old fabrics and embroideries. There are also collections of importance in other cities in the German Empire. The central museum for the Rhine district and Westphalia, in Düsseldorf, contains about 6,000 old specimens; that in Crefeld possesses about 5,000, and the museum of Cologne several thousands. One circumstance in connection with the museum of Düsseldorf deserves special notice. All associations, manufacturers, and artists who are members of the museum can receive its treasures on loan, as the institution is not conducted on the principle that it is desirable to put as many obstacles in the way of using it as possible. Museum curators in England please note.

THE SEA ROUTE TO CENTRAL SIBERIA.

On one or two occasions attention has been called in these columns to the grand discovery of Captain Wiggins, an English sailor, of a sea route to central Siberia by the Kara Sea and the Siberian rivers discharging into it. Unquestionably this is a great geographical discovery, and the more it becomes known the more valuable it proves. A most successful result has attended this year's adventures, and there is every reason to think that a valuable trade would soon spring up if only the commercial policy of the Russian government was of a more liberal character. But, as we pointed out at the time, it is not at all likely that a Government which closes both its front and side doors to commerce will permit trade to be carried on by the back door. Unless, therefore, which is not all within the range of the most hopeful vision, Russia should suddenly change a policy that has become almost traditional with her, it would be folly to hope that commercial intercourse with Siberia will be permitted for any length of time, whatever advantages it might confer upon the isolated beings who dwell in that great lone land. A few days ago the *Times* commented upon the past season's success, and its account has already aroused alarm amongst the classes whose interests consist in maintaining the present policy of commercial isolation throughout the whole of the great northern empire. The *Moscow Gazette* of Tuesday has the following:—

It would be an unpardonable mistake to allow foreigners uncontrolled sway in Siberia, which is Russia's *Hinterland*. The endeavours of Captain Wiggins, and the succesful efforts of Sir Robert Morier, praiseworthy as they are from an English point of view, can only be rewarded and satisfied so long as they do not injure Russian interests. The defence of such interests lies with the Ministery of Finance, which has already given a definite shape to its views on questions of this nature. We have no doubt that it will be equal to the occasion in the present case. At all events, all similar questions will be decided as soon as we can muster energy enough to realise the project of the much-needed Siberian railway.

Our Russian contemporary can only see one set of interests in Russia—those of the producing or manufacturing classes, which are guarded by such a rigid monopoly over the country's vast domains. The consumers of Russia, and especially those in the far distant regions referred to, amongst whom the appearance of the English ships has been like a vision from Heaven, have of course no interests. The light dawning upon them, which has carried more joy to their hearts than the most brilliant *aurora borealis* of their northern skies, must be shut out again, and the opening through which it penetrated must be closed by a seal more unbreakable than the ice of the northern seas, which for ages upon ages has shut them in and prevented them from having intercourse with the outer world. There is good reason to believe that Siberia possesses untold mineral and other natural wealth, which only needs a practical road into the markets of the world to lead to its development. It will be an unpardonable blunder of the government of the country if, for the sake of preserving the supposed interests of a small class of manufacturers, it should now interpose its veto upon the desire of its subjects in those distant regions to join in and benefit from communion with the outside world.

THE TEXTILE OPERATIVES OF LYONS AND ST. ETIENNE.

As the recent Calais strike has called attention to the textile operatives of France, a few facts about the social position and personal character of some of them, particularly the silk workers of Lyons and St. Etienne, which have been recently published in the pages of the *Revue des Deux Mondes* will, we apprehend, be interesting to our readers. In the opinion of our contemporary, it is very difficult to estimate with any approach to accuracy the wages of the textile operatives of the places named, because they vary according to the nature of the work, the skill of the worker, and the situation of the town. At Lyons some workmen of exceptional dexterity can earn as much as eight francs a day at a time of great pressure, whereas at other times they earn only three francs, or even 2½ francs. The wages in the auxiliary branches, which are attended to by women—warping and reeling of silk—vary from two to 1¼ francs a day. If we attempt to strike an average for the weaver we find that his daily wages very little exceed five francs a day for the foreman, and 2½ francs for the ordinary operative, those who tend power-looms receiving even less. And yet few departments of skilled labour demand so studious an apprenticeship, so light a hand, and so sound a taste. The worker of Lyons and St. Etienne, it has been said, inherits the tradition of his trade and the love of it; he is as much attached to his native city as the mountaineer to his mountains. He is proud of his calling, and loves his work to a very remarkable degree. His ingenuity is surprising; he is constantly inventing improvements in the machinery he uses, a habit which the Chamber of Commerce of Lyons is wise enough to encourage by prizes. It has been affirmed with reason that the manipulation of silk-yarn in these two cities is a sort of hereditary aptitude whenever weaving, dyeing, finishing, and other processes are in question. As for the designers, some idea of their inexhaustible fertility may be inferred from the circumstance that since 1813 the "Conseil des Prud'hommes" of the Lyons silk trade has registered more than 110,000 designs and new arrangements. The workman weaver in these cities represents a special type of the French working-man. In most instances he owns two or three looms, and has some savings besides He lives in an extremely orderly manner, reduces the cost of his living by societies of mutual help, and is peaceably disposed and attached to his family. His character is a little mystical; he has philanthropic tendencies, and is inclined to socialism of a practical and relatively mild type. Since 1848 he has never been found connected with extreme parties, and yet he has had to pass through some painful crises, especially in St. Etienne, which is very dependent on the freaks of fashion.

THE BARING FAMILY AND TEXTILE MANUFACTURING.

It is tolerably well known that the founder of the English branch of the Rothschilds commenced his career in the print trade of Manchester, but the fact may not be so familiar that the Barings originally were engaged in textile manufacturing. The family is of Dutch origin. Its founder, Peter, a burgher of Gröningen, Holland, gained some little note after the foundation of the Dutch Republic by William of Orange. His grandson, Francis, was a Lutheran minister at Bremen, and came to England with the other William of Orange in 1688. He settled over a charge of his own faith in London. His son, John, who had been apprenticed to a cloth manufacturer in the old country, set up a mill of that kind in Devonshire, and did so well at it that he moved to London and became a famous merchant. He sent his cloths altogether to the American colonies, and got back goods that he could sell to advantage in London, coining money both ways. He died rich, and was as well known for his sterling honesty as for his wealth. John Baring's third son, Francis, succeeded to his father's business, and enhanced the reputation of the house. He had been carefully trained for a commercial life. When he first came into his father's warehouse as an apprentice he was a sort of mathematical prodigy and amazed the old heads by the extent and profundity of his calculations. At first he and his brother John carried on the cloth manufacture. This was the origin of the house of to-day. Then John wearied of business and retired on an ample fortune. Francis went on, married an heiress, added her capital to his own, bought East India and bank stock, and began to be

looked upon as one of the solid capitalists of his day. His advice was sought not only by the great merchants but by the Ministers of the Government. After that the career of the Barings was bound up in finance, the cloth manufacture naturally retiring to the background. The house progressed both in fame and wealth. Honours poured in upon its members, and the firm was flatteringly referred to by a prominent politician as one of the powers of Europe, the said powers being England, France, Germany, Russia, Austria, and Baring Brothers. With the misfortunes that have recently clouded its great name the country is already familiar, and reference is only made to the matter here for the purpose of recording the interesting fact of the early connection of the Barings with cloth manufacturing.

THE INDIAN FACTORY COMMISSION.

Our readers will be interested in perusing a summary of the Report of the Indian Factory Commission, to which we have several times adverted. The summary was telegraphed from Calcutta on Wednesday by the *Times* correspondent in that city. It is in all probability perfectly accurate :—

First, the limitation of the hours of work for women to 11 daily is proper and sufficient. Female operatives do not desire the present hours shortened; on the contrary, many have expressed themselves strongly against any interference which may lead to their losing their means of livelihood. Secondly, the Commission, after anxious consideration, recommends that no separate class should be recognised by law as young persons, and that the difficulty should be met by raising the *minimum* age of children to 14. Thirdly, regarding children, the Commission is of opinion that, except under the shift system, nine hours is too long; that nine hours in shifts for only four days—that is, 36 hours weekly, as is the practice in Bengal factories—cannot be considered overwork: that nine hours on the shift system, even if it entailed 54 hours weekly, would not be too severe; that any change would lead to the reduction of wages; and that in mills outside the Bengal shift system, half-time is the only solution of the question, and children should not work over six and three-quarter hours daily. Fourthly, women and children should have one holiday in every seven days, preferably Sunday, as should also male adults, except where continuous production is necessary. Fifthly, operatives desire that the present working day—that is, from daylight to dusk—should be continued. The Commission think the conditions of factory labour do not call for legislative interference with the number of hours during which a male adult may choose to work.

We reserve comment for the present.

THE PROTECTION OF SERICULTURE IN FRANCE.

A curious demonstration of the inefficacy of protection has just been given in a French journal, the *Bulletin des Soies*, the substance of which we reproduce as likely to be of interest to our readers. There has been for some time a gradual rise in the price of cocoons. In 1888 cocoons fetched 3 francs 50 cents per kilo., and in 1889, 3 francs 80 cents, while in the present year the unexpected figure of 5 francs has been repeatedly attained. This result is not owing to protection, as this branch of the industry is not protected, but to the establishment of equilibrium between production and consumption. In the silk-throwing department, on the other hand, a very different state of things prevail. Organzines remain unsold, and are accumulating in stock. Yet a protective duty was imposed some time ago, and for a season appeared to have satisfactory results, causing for a whole year a return of prosperity. But for the work to be remunerative the worked-up silk must continue to be in demand, and this has not been the case. The equilibrium between consumption and production has been destroyed, and therefore the present depression results. "Look round you ;" says the French writer, "the high-speed power-looms are in demand, and have plenty to do, because what is dyed in the piece is in fashion. Hand-looms, on the contrary, are neglected. Now the latter use organzine for the warp, and the former want raw silk. So in less than six months facts give us these two results :—(1) That prices of cocoons have risen without protective duties. (2) That prices of thrown silk have fallen with protective duties." If our French friends are as logical as they claim to be, they cannot fail to see the inference.

Articles.

CAPITAL AND LABOUR IN INDIA.

On many accounts India is a land of great interest to English people. For good or for evil we have acquired control over its destiny, and therewith the enormous responsibility of dealing honestly and justly by its millions of inhabitants, and of contributing everything in our power to enhance its material well-being. India is a land of many peoples and languages, possessing numerous conflicting interests, which in the past, and previous to our appearance upon the scene, were the origin of intestine wars, from which, indeed, the country was rarely if ever free. We regard it as a distinct service of no small magnitude to the natives of India and to the general interests of the human race that we have been able to put an end to this condition of matters. Formerly famine and disease, the consequence of starvation on a wide-spread scale, were hardly ever absent from one large portion or another of the peninsula ; under the changes wrought by our administration these have rapidly diminished to the point of disappearance. Therefore at the present moment, owing to the improvement in communication, famine on a large scale, or even a small one, is almost if not quite an impossible occurrence. This change too should be written down to our credit. The social condition of the inhabitants is also undergoing great change for the better. In fact our possession of the country has brought the stagnant pool of Indian life into contact with the re-vivifying influences of the great river of human progress, from which it had been shut off for centuries. The benefits accruing to the country from these sources are simply incalculable, yet they do not exhaust the list. There are many other phases of the country's welfare that are materially affected and in a beneficial manner by our presence. But the one to which we desire for a brief space to direct attention is that of the industry of the people, especially in the textile trades, as it is affected by our connection with the country and our presence there.

It will be obvious to every one that the political connection subsisting between the two countries could not possibly exist without a resulting interaction of the influences of each. We owe much to India, and India in return owes much to us. India is the native home of the cotton industry, and the desire to acquire a share in its trade in calicoes and muslins did much to stimulate the commercial enterprise of this country, out of which has sprung our political eminence. We shall not be wrong if we attribute to the desire to compete with these fabrics amongst our workpeople at home, a great portion of the stimulus that resulted in the inauguration of the modern epoch of invention, and the revolution of industry that has been its outcome. In the old domestic industries of both this country and India the functions of the modern capitalist and workman were combined in one person. These systems were displaced in this country first, and the subdivision resulting in the modern capitalist and workman was also first developed here. This constitutes an important phase of the new order of things. The great change has been completed, giving the new system of industry an enormously increased competitive power when contrasted with that of the old type. No wonder, therefore, that before this influence the domestic systems of industry in India have been going to the wall during the past forty years. But it is remarkable that the force which was apparently threatening destruction to Indian industrial interests should prove their saviour. Capital has no sentiments ; it avails itself of the most favourable conditions for assuring a reward for its employment, and in the most abundant measure. This being the case we need affect no surprise that much capital, the product of English enterprise and industry, should have been transferred for investment to India as a more fruitful soil, and one that promised a greater return. Capital is the offspring of labour and economy, but we are prepared to admit that it has not always been a considerate child towards its parents. In the early years of the present century, and indeed until half of it was expired, capital was distinguished in this country by a great tendency to oppress its parents. This led to the interference of the State and the enactment of the Factory Laws, under the protection of which the parents have become strong and quite capable of resisting oppression from whatever source it may originate. The contest between the two has, therefore, resulted in what may be regarded as practically an equitable division of the profits resulting from their conjoint work. Such is the state of matters in this country ; let us see how they stand in India.

Capital has no sentiments, but steadily and persistently uses every advantage that will tend to reproduce it. It is not surprising therefore that in India we find the history of its relationship to labour repeating itself in the exhibition of similar phenomena. There is now to be seen in India the beginning of a struggle between capital and labour, in which the battles that have been fought in this country seem likely to be fought over again in something like analogous circumstances, though with some differences. The old system of domestic industry in textile manufactures has to a large extent been superseded by the introduction of the English system of conducting the manufacture in large mills furnished with the best English machinery. This change commenced about 30 years ago, and has now made great progress, so much so as to become a formidable competitor with the production of the home industry. There has also grown up along with it the conditions out of which disputes between capital and labour generally grow, and these are now finding themselves arrayed in opposition to one another, for the first time perhaps in the history of the Indian peninsula. As was the case in this country, it is not a wages question that places them in hostile array, but rather a cry against long hours, overwork, and various kinds of petty oppression. This cry has been more or less in evidence for some years, and has led to the enactment of several measures to prevent or mitigate the worst features of the case. These however have not proved very satisfactory, and a commission has just finished taking evidence with a view to further measures on the subject. But the question between these two is much com-

plicated by the reflex action of Indian manufacturing under these conditions upon the industry at home, and this brings in the differences in the contest incidentally mentioned above.

English capital and English labour are both deeply interested in the condition of capital and labour in India, and the questions that may arise between them. Indian labour is fortunate, as it will have English capital as well as English labour for allies in securing the redress of any wrongs from which it may suffer. But independently of this the interests of English capital and English labour are deeply involved in the question, because the freedom of action of both in this country are held in severe restraint by legislation.

There is therefore so far as this country is concerned, a very natural demand that conditions in this respect shall be equalised, and that the restraints applied to one shall control the other. It cannot be permitted that capital employed and invested in one Empire shall be treated with more favour in one part thereof than in another; and it is not desired that capital in this country should enjoy any advantages that are not accorded to that invested in India. These remarks apply with equal pertinence to the labour of both countries. We hold therefore that the demand recently made by Mr. Henry Harrison, Chairman of the Blackburn Chamber of Commerce, is a perfectly just one, and ought to be conceded. It is that the cotton trade of our dependency shall be placed under the same laws as that of this country; or, alternatively, that the cotton trade of this country shall be governed by the laws governing that of India. It is useless to cry out, as has been done by our Indian contemporaries, that this demand originates in the selfishness of the Lancashire trade, as if that were something of a very heinous character; it is the instinct of self-preservation which is heard in the demand, and when it asks for nothing but equitable treatment it is as high and noble a sentiment as any other to which human actions can be attributed. The vast capital irretrievably invested in the English cotton trade and its dependent industries—which is probably not less than £150,000,000—cannot be permitted to be obliterated by allowing to a competing industry, employing a much less amount and under the same government, such special privileges as will destroy the former. Neither can the million of people directly employed in the industries mentioned be permitted to be reduced to starvation by the same process in order that the small population of Hindoos as yet employed in the Indian cotton mills may prosper and increase in number. We are quite prepared to admit that England on the one hand may have some advantages over India in several respects, but these are more than compensated for by the very tangible advantages that India can shew in the shape of cheap labour, and cotton growing at its doors. We venture to assert that a settlement of this matter, though not at present pressed with great force, will continue growing until it is conceded. As we write a brief synopsis of the report of the Indian Factory Commission has come to hand, and will be found in another column.

NORTH AMERICAN INDIAN TEXTILES.

Old friends of our youth, long forgotten, have been brought up afresh during the past few days. Fine fellows, who seldom said more than "Ugh" at a time, who could stand motionless by the hour, or march in single file at a swinging pace by the day together, who could follow a trail over a prairie or through a forest, find a birch-bark canoe at a moment of extreme peril, or defy all the devilry and tricks in assault of a hostile tribe, these have been keeping company with pioneer emigrants, shrinking but comely maidens, and gaunt trappers, as wily and bold as the redskins themselves, while the latest despatches about Short Bull, and Plenty Bear, and Big Foot, have been perused in the newspapers. The mere mention of mysterious and menacing dances is almost enough to fetch down Fennimore Cooper, Mayne Reid, and Gustave Aimard together from the book-shelves, if maturer years did not deprecate the war-path and remember that the Red Indian of to-day is rather a pitiful creature, confined within "reservations," and largely dependent upon government rations. It is true that he most likely deserves more pity than blame, and that, like most native races everywhere, he has had rather a hard time of it since the white man put foot in his neighbourhood. But the fact remains that the "noble savage" is an anomaly in a nation like the United States, and nobody can doubt that he must either conform to civilisation, take to trousers instead of fringed leggings, and boots in place of moccasins, or suffer extinction.

In some instances the Indian has already begun to submit to the inevitable. Children have been permitted to go to "seminaries" established for their education, while young "braves" have taken to shirts, and put them on properly. It has been remarked by one who knows the people well that pockets do not seem to appeal to their intelligence or ideas of comfort, but it is known, on other authority, that the use of a pocket-handkerchief, even if it is worn around the neck, is recognised and appreciated. More to the purpose, however difficult the fact may be to reconcile with the Last of the Mohicans, many of them are patient if not very skilful farmers, raising crops of corn and potatoes, and breeding stock in a small way, while the more wealthy and intelligent have fields of cotton. In Arizona the Pima Indians used to raise cotton before the territory was occupied by the United States, and for some years after, producing enough to make many "blankets" for themselves, but since then finding it cheaper to buy American blankets with corn more easily cultivated. In that case the planting of cotton has come to a full stop, but on the Indian reservations farther north it is freely grown, so that the estimated crop of 1879 amounted to some 17,000 bales.

This is a matter of recent development, but in one respect the old fascinating tales of frontier life did the Indian less than justice. They were too full of moving adventures and hair-breadth 'scapes to make mention of anything so prosaic as textile manufactures, and yet there was a very creditable degree of skill, both in weaving and design, to be found among some of the tribes, particularly towards the south. It is considered certain that these arts are aboriginal, and although European influence has undoubtedly had some effect upon them, Dr. Washington Matthews is of the opinion that the extent and character of the foreign element can be easily traced. The Navajo Indians of Arizona and New Mexico have still a great reputation for the blankets they produce, and they deserve it; while the Moquis of Arizona are equally skilled in the manufacture of a finer class of the same article, much sought after by the surrounding tribes for use in sacred and other dances. One kind of blanket is woven only in the "Estufas," and almost exclusively employed on ceremonial occasions, all other garments being made in the houses or in the open air. The Pueblo Indians of New Mexico are also expert weavers, after their kind, and among them and the Navajos there is not a family that does not, on the testimony of Mr. James Stevenson, possess the necessary implements for weaving blankets, belts, and garters, although Dr. Matthews says that in some pueblos the practice of the loom is almost neglected. However that may be, it is certain that both peoples take honours in weaving, producing really excellent work. Although it is open to question, "there are many reasons for supposing that the Navajos learned their craft from the Pueblo Indians, and that, too, since the advent of the Spaniards; yet the pupils, if such they be, far excel their masters to-day in the beauty and quality of their work, It may be safely stated that with no native tribe in America, north of the Mexican boundary has the art of weaving been carried to such perfection as among the Navajos, while with none in the entire continent is it less Europeanised. As in language, habits, and opinions, so in arts, the Navajos have been less influenced than their sedentary neighbours of the pueblos by the civilisation of the Old World. The superiority of the Navajo to the Pueblo work results not only from a constant advance of the weaver's art among the former, but from a constant deterioration of it among the latter. The chief cause of this deterioration is that the Pueblos find it more remunerative to buy, at least the finer *serapes*, from the Navajos, and to give their time to other pursuits than to manufacture for themselves. They are nearer the white settlements, and can get better prices for their produce; they give more attention to agriculture; they have within their country mines of turquoise, which the Navajos prize, and they have no trouble in procuring whisky, which the Navajos prize even more than gems. Consequently, while the wilder Indian has incentives to improve his art, the more advanced has many temptations to abandon it altogether."

Time was when various materials were used in this manufacture, the down of birds and the hair of animals, always the first resource of peoples who have learnt to desire something better than home-cured skins, and there was constantly available as much as might be wished of the fibres of the yucca, if pains were only taken to extract the fibre from the plants which grew, and still do grow, so freely all about the country. This, one of the strongest of all natural filaments, has been used from time immemorial for making cordage as well as cloth, and still forms one of the hopes of sanguine enthusiasts who look for the coming of the perfect decorticating machine. Some cotton was once used, but all these substances have now been given up in favour of wool more easily obtained from the domestic sheep, of which the Navajos are said to possess vast herds, a statement which requires to be taken comparatively. This is prepared with hand cards purchased from the Americans, and spun on the spindle, which with them is nothing more than a slender stick thrust through the centre of a wooden disc. With the Moquis the spinner, squatting on the ground, keeps one foot upon the spindle, twirling it while she forms the thread with her fingers, making, with her stern face, tangled hair, and ungainly form, a figure which might stand for the grimmest of the three sisters of Fate. To use machine-made cards must be considered a great concession. The Mexicans on the Rio Grande use spinning wheels, but although the Navajos have often seen these wheels, have had abundant opportunities for buying or stealing them, and certainly possess sufficient ingenuity to make them, they have never yet abandoned

the rude implement of their ancestors. The threads are coloured yellow, dull red, and black with native dyes, and they have also a range of neutral tints in natural wools, while they buy indigo for blue. Some brilliant red figures in the finer blankets were, a few years ago, made entirely of *bayeta*, and this material, which is still extensively used, is a bright scarlet cloth, finer than that which is freely bought by the Indians of the north, but both known as Stroudings, which is an unexpected compliment to the splendid scarlet dye for which the good old Gloucestershire town has so long been famous. The bayeta is bought from frontier traders instead of from Mexico as aforetime, and it is unravelled by the Indians for the threads to be used as weft, just as the bright-coloured cloths were at one time unthreaded in Abyssinia to be woven into the borders of native fabrics, or, for a much older precedent, as the earliest of bombazines in Europe were made up afresh from the threads of thicker silks brought from the East.

Given these materials, and imagining the most primitive form of loom that has ever been known in use in Egypt, or Greece, or Hindostan, generally at work in the open air and frequently with two convenient trees for uprights, it is easy to see in the mind's eye the Navajo weaver at work. All the appliances are of the simplest description, the combs for straightening the warp are cut out of wood, the beams are nothing more than suitable poles, there are flat sticks for breaking up the woof, and the batten is another narrow board. There is no shuttle properly speaking, but the weft is wound on a slender stick, or, if the pattern is an intricate one, made into little balls and threaded through with the fingers. "When the web is so nearly finished that the batten can be no longer inserted in the warp, slender rods are placed in the shed, while the weft is passed with increasing difficulty on the end of a delicate splinter, and the reed fork alone presses the warp home. Later it becomes necessary to remove even the rod and the shed, then the alternate threads are separated by a slender stick, worked in tediously between them, and two threads of woof are inserted one above and the other below the stick. The very last thread is sometimes put in with a darning needle, and the weaving of the last three inches requires more labour than any foot of the previous work." As the web never exceeds in size the upright frame of the loom there are no lengths of material manufactured, and the labour really deserves the name. It *is* labour. One of the few male weavers, since they are mostly women, and he considered to be an expert, took a month of close application to make a blanket 6 feet 9 inches long, by 5 feet 6 inches wide. Yet, when all is said, the product, both in texture and harmony of colouring, deserves much praise, and may afford yet another proof of the wonderful capacity of comparatively unintelligent handiwork.

Letters from our Readers.

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

"OUR INDUSTRIAL FUTURE."

(To the Editor of *The Textile Mercury*).

Sir,—I was very much interested in your article on "Our Industrial Future," which appeared in the issue of Nov. 29, although not agreeing with all your statements

You wrote:—"Other nations are increasing their productions of cotton goods at a greater rate than we are." I venture to differ from you; and should like to submit to your readers for consideration another way of fixing these ratio productions than that generally accepted as correct. To my mind these are based on a very peculiar method. According to most people's views, if one mill is already existing and another similar one is built, the increase is 100 per cent. Under these conditions, supposing we have 100 mills and build 50 other similar ones, our increase is only 50 per cent. The real and proper way, I submit, to reckon out the ratio of increase is by taking *population* into account. If we, with a population equal to that of another country, add 50 mills, and the country in question one, then I argue that our increase is 50 times as much. Especially in the cotton trade should this mode of comparing ratios of increase be adopted, seeing that we have got far beyond our own consuming capacity, and any addition to our production must needs go to other markets, where we are handicapped by freights, duties, etc.

Take Germany, for instance, where there are 5,500,000 spindles at work. The increase in 1889 was about 250,000. The increase in Great Britain in the same year was nearly 1,000,000 spindles. In other words, with a less population than that of Germany, we have increased our production four times as much. If population is not taken into account the German increase would be 5% and ours only about 2%. I will, however, leave your readers to judge which method of comparing ratios is the most correct, and draw attention to the information given in the *Manchester City News* of November 1st last, comparing the number of spindles, power-looms, and persons employed in 1874 and 1889, which concludes as follows: "These are figures which merit careful study and consideration from those who are inclined to indulge in foolish talk over the decadence of manufacturing industries in the United Kingdom."—Yours etc.,

Bury. Oscar S. Hall.

QUERIES.

A few weeks since you stated in *The Textile Mercury* that the New Zealand Legislature had offered a premium of £10,000 for a machine that would dress and deal with the fine flax (*Phormium Tenax*) in a more economical way than any existing machinery. Do you know if this is absolutely correct, or is it only rumour?—G. F. P., Halifax.

ANSWERS TO CORRESPONDENTS.

G. F. P. (Halifax).—We stated that a Committee of the Legislature had recommended the Government to offer the premium—not that it had been offered. The New Zealand Government, however, has not yet adopted the suggestion to offer a reward.

Designing.

NEW DESIGNS.

FANCY SILK SPOT DESIGN FOR VESTINGS, ETC.

We submit two designs* for silk fabrics, believing they will be acceptable to manufacturers who do not care to indulge in erratic flights of imagination, or in the fluctuations of fashion. If proper materials for warp and weft are used, these designs will be found simple, beautiful, effective, and more than all else, productive of a very cheap cloth. There can be very little difficulty in adapting the figures to any reed. *No. 1* herewith may be made of 20's two-fold organzine or Japan silk (which is very economical) in a 60 reed, 2 in a dent, or 60 ends per inch; for weft a flossy tram silk, very loose in the twine, with 48 picks per inch of 10's two-fold. As will be seen, the draft is 32 ends on 8 shafts, and the pegging plan 32 to the round. It is perhaps needless to remark that these particulars can be altered at any time, and without risk of endangering the tissue, which is firmly bound by a plain ground. The figures owe their neatness and effect to the weft flushes, and by the use of a diversity of shades and tints a goodly number of surprising, though pleasing effects, can be obtained. We give a few very likely colour combinations for wefts and warp; but it would be well to produce a range in self-colours or very light shades. Warp and weft all white, light, mid, and dark cream, mid buff, mid and dark fawn, drab, mid light and dark linen, dove, dark yellow drab, light and mid lilac, light and mid pink; for contrasts, warp, mid coral; weft, white; warp, light pink; weft, cardinal, mid coral, light claret, dark sky, and dark marone; warp, royal blue; weft, white, dark buff, dark cream, light stone, mid straw, and old gold. It will be seen that there is no stint to the number and variety of changes obtainable in these classes of designs.

*The other design appeared last week; reference should be made thereto.

TWILLED LINEN DRESS CHECKS AND STRIPES.

The following patterns for spring, especially in all linen, will be found very suitable, and ranges in various shadings ought to be got ready forthwith. A six-end twill, three up and three down, six to the round, straight over draft, 72 ends to the inch, or 36 reed, two in a dent; warp all linen, 50 lea, or two-fold cotton 40's; weft 72 picks per inch, of 50 lea tow and 40's two-fold cotton.

No 1 Pattern.—Warp: 36 white, 6 blue and white twist, 40's two-fold; 12 white, 3 white and red twist, 40's two-fold; 12 white, 6 blue and white twist, 40's two-fold. Weft pattern the same in every respect as warp.

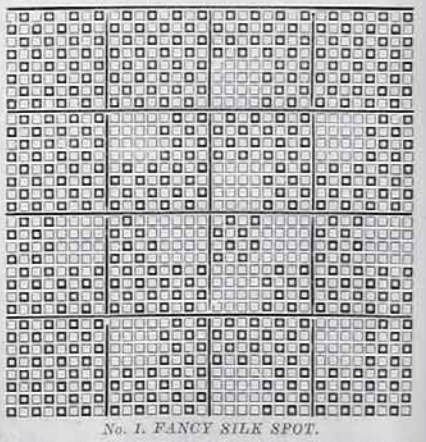
No 2 Pattern.—Warp: 36 white, 6 brown and orange, 40's two-fold. Weft pattern: the same, only blue and white wound together without any twist whatever, the blue and white being 40's single each colour, so that when put together on one weft bobbin they will equal 20's.

No. 3 Pattern.—Stripe: 24 white, 3 light blue and dark brown, 40's two-fold, 24 white, 12 red and white, 40's two-fold, 3 black, 12 red and white, 40's two-fold; total 78 ends.

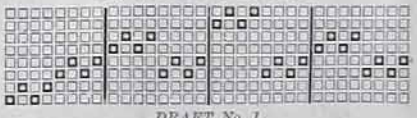
No. 4.—Stripe: 24 white, 3 red and white twist, 40's two-fold; 24 white, 12 dark blue and white twist, 40's two-fold; 3 dark blue, 12 dark blue and white, twist 40's two-fold; to 78 ends.

No. 5.—Warp: 72 ends of orange buff, 6 dark blue. Weft: 72 picks of white and 6 of red.

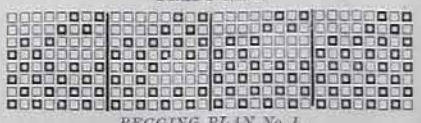
No 6.—Warp: 36 buff, 3 peacock blue, 36 buff, 3 of dark rose. Weft: 36 buff, 3 dark rose, 36 buff, 3 of peacock blue.



No. 1. FANCY SILK SPOT.



DRAFT No. 1.



PEGGING PLAN No. 1.

NOVELTIES IN WOOLLENS AND WORSTEDS.

It is surely not needful to impress upon manufacturers the importance of introducing into their pattern ranges novelties either in weave, colour, or effects produced in any other ways ; and yet we cannot but think that manufacturers are sometimes to blame in not making the best of opportunities in this direction. Many manufacturers, for example, will not go to the expense of producing novelties when there would really be little or no expense at all. Again, others say that they cannot sell novelties ; but then, is it not a fact that novelties help to sell the ordinary cloths? Recognising these facts, we would if possible impress upon manufacturers by the accompanying designs, etc., that little expense need be incurred in producing novelties of a very creditable character.

In *Designs 205, 206,* and *207* the principle is maintained which has been commented on in past numbers of this journal, viz., using weave, etc., to distrioute colours.

It is a well-known fact that all the better-class heavy worsteds are as a rule backed with warp. Two factors influence the manufacturer in this case : firstly, tailors will not purchase, if they know it, a backed or double cloth, and backing with warp is made to give the appearance of a single cloth by means of coloured threads in the backing-warp ; nd secondly, in warp-backed goods as compared with weft-backed goods there is the saving of expense from the absence of one or more extra shuttles. Though there is often additional expense in the necessity of using two beams.

Now the designer of this class of goods has practically at command an extra warp, which he can use as such with little detriment either to the back of the piece or to the structure of the cloth. In coatings and trouserings this extra warp may be used either to produce a twill, a spot, or any other effect suitable for the class of material.

In *Design 206* half of the effect shewn in sketch *A* is developed. The backing-warp here, if such it may be termed, interweaves with the weft on the same principle that the face warp interweaves with the weft, so that both may be brought off one beam in this case. This effect is of course too large to weave on a dobbie, but we should recommend the trial of such effects as these on the jacquard, though no doubt if drafting be resorted to, good effects may be obtained on ordinary looms. In this design the face warp should be black and the backing dark red olive black. Checking threads and picks may be introduced if desired, but such colouring must be very subdued.

Design 207 is a simpler example of the same type. The effect produced by the backing is shewn in *Design 202 A*, but it should be observed that in this case a stripe effect is intended, since after the backing has formed *Design 207 A* on the face of the fabric it then passes to the back, being tied where two face threads coming up on either side hide it entirely. The width of stripe must be decided according to circumstances, and the face weave of the cloth may of course be varied, though this should always be done in accordance with the use made of the backing warp. This design, like the preceding one, is constructed with the idea of using only one beam.

Design 208 is an example of a slightly different type. In this case a 2 and 2 twill backed with warp has first been indicated on the design paper, the back being tied on the eight-end sateen principle, but a modification is introduced in the first eight and last eight threads of the design, this modification simply consisting of flushing the backing threads over the face picks of the 2 and 2 twill, thus in this case forming a spot in twill order. The following colouring will be found suitable :—

Warp.			*Weft.*
1 thread	brown mixture,	Repeat for 8 threads.	All black, or dark shade.
1 ,,	lavender,		
16 ,,	black,		
1 ,,	brown mixture,	Repeat for 8 threads.	
1 ,,	light drab brown,		

Care must be taken to distribute the spots, if such they may be termed, in such a manner that no lines across the piece are observable.

Sketches *B* and *C* give an idea of the effect of these designs in the cloth.

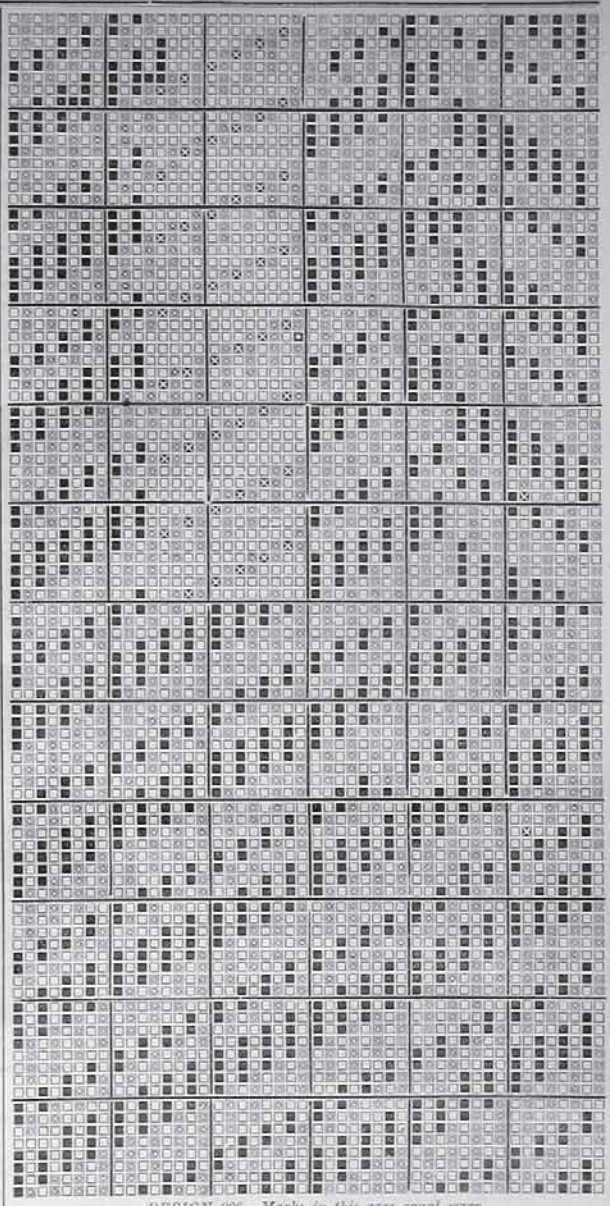
We need scarcely remark in conclusion that many forms, such as twills, intersecting lines, etc., will furnish excellent jacquard work, developed on the principles here indicated, which, as we have previously remarked, practically amounts to *the distribution of colour by means of weave.*

A

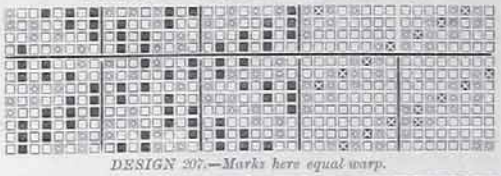
B

C

SKETCHES.

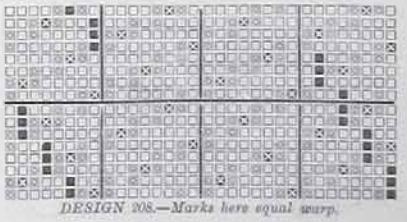


DESIGN 206.—Marks in this case equal warp.



DESIGN 207.—Marks here equal warp.

DESIGN 207. A.



DESIGN 208.—Marks here equal warp.

Machinery and Appliances.

THE SMOKE NUISANCE: ANOTHER IMPROVED SMOKE CONSUMER.

MR. T. BAYLEY, BAYLEY-STREET MILLS, STALYBRIDGE.

The determination of the public to prevent the contamination of the atmosphere by means of smoke seems to be daily growing stronger, if we may take the numerous prosecutions by the local authorities and individual objectors to be a gauge of its feeling in the matter. This sentiment is one with which we have a large amount of sympathy, as we hold that there are now a number of appliances of proved efficiency, easily fixed, costing little, and durable, by which the nuisance can to a large extent, if not entirely, be prevented. This journal was the first to draw attention some months ago to one of the best, and we have much pleasure in performing a similar service again.

The improved patent smoke consumer to which we now direct the attention of our readers is the invention and patent of Messrs. Bayley and Byrom, the former the proprietor and the latter the manager of the extensive cotton mills known as the Bayley-street Mills, Stalybridge, and other mills in the same town and in Ashton. At Bayley-street mills there is an installation of six boilers, consuming about 100 tons of coal per week of the legal working hours allowed in the cotton trade.

It is unnecessary to go over the ground and to describe again the phenomena of combustion, which was recently done in several articles in these columns, and we may therefore proceed at once to describe the new appliance. It displaces the old style of bridge, and really when in position constitutes a new and improved, form. Its principle consists in the admission of a sufficient supply of atmospheric air, with its natural constituent oxygen, and at the position where the gases being given off are at their maximum heat. On receipt of this supply, ignition instantly takes place, and almost every particle of carbonaceous matter is consumed. The means by which this is accomplished is to substitute for the ordinary bridge, an improved arrangement consisting of a box strongly made of fire clay, and having a cover composed of strong fire clay slabs, as shewn in our illustration, Fig. 2. This box is 2ft. 3in. by 12in. by 5in. The slabs forming the cover, of which there are three, are perforated with about 60 holes of a conical form, 1 inch in diameter at the bottom, and ½ inch at the top. The bottom of the box has four holes 2½ inches in diameter, forming inlets for air coming in beneath the fire bars, which of course fills the box and gets heated to a considerable degree before it is drawn into the furnace through the perforations of the cover. The strong current of the furnace draught draws the air through each of the conical holes with great force, where, impinging against the volume of smoke, the latter is ignited and is burnt with a clear bright white flame, consuming all the carbonaceous matter and thus preventing the pollution of the atmosphere by its emission into it, as so generally is the case at present from nearly every boiler furnace.

We made our visit to the mill without prearrangement as to time, etc., and having had the chimney pointed out to us as belonging to the mill for which we were enquiring, it being a common thing to use these as finger posts or landmarks in the manufacturing towns, we took the opportunity, unknown to the proprietors, of doing a little amateur observation of an entirely independent character from the goods yard of the railway station. The results were most satisfactory, as far as they went, the chimney all the time being practically smokeless, whilst the neighbouring ones were intermittently belching forth dense volumes of black smoke, which when divided and dispersed must pollute a very large cubical area of the atmosphere, rendering it to a large degree quite unfit for breathing. When sufficiently diluted with purer air as not to be immediately destructive of life, the whole volume thus contaminated still remains very foul, constituting the normal atmosphere of our manufacturing towns, which is constantly depositing "blacks" or soot-flakes. It is really time black smoke was disestablished, when, as observed above, the means of accomplishing that end are at hand.

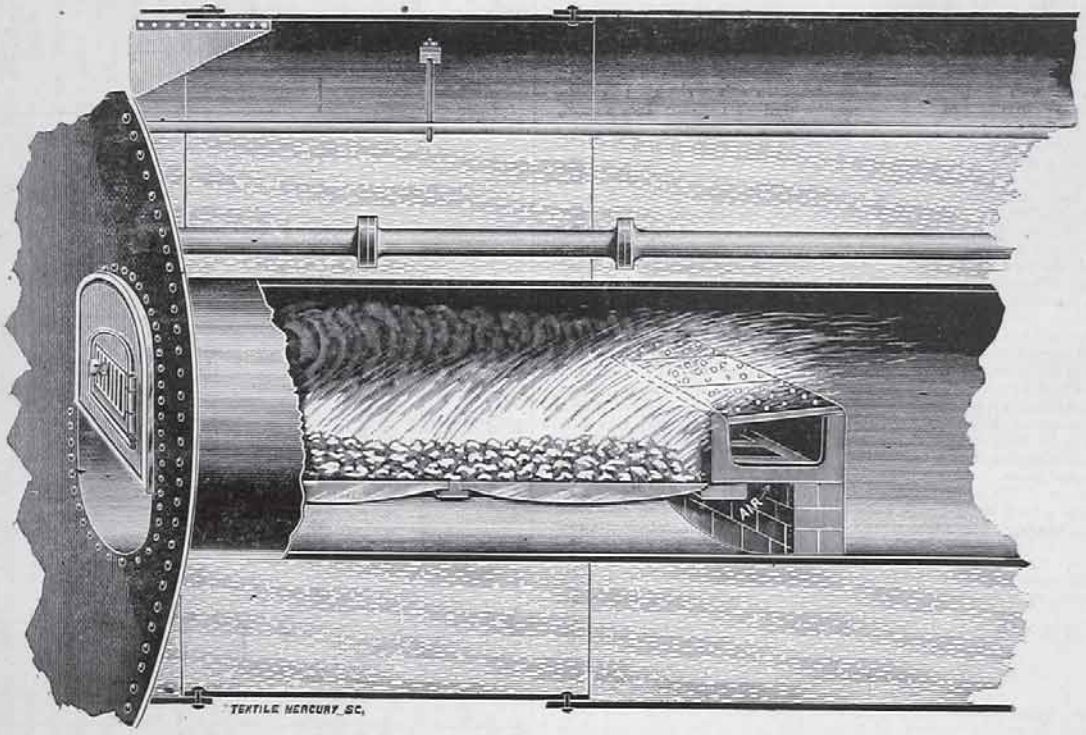


FIG. 1.—BYROM & BAYLEY'S PATENT SMOKE CONSUMER.

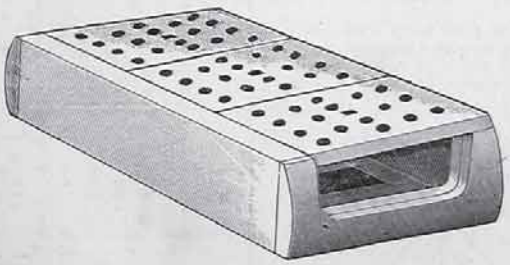


FIG. 2.

As a testimony of the value of the appliance we are describing, a report is appended herewith from the Smoke Inspector of the borough of Stalybridge, in which the Bayley-street mills are situated :—

Victoria Market, Stalybridge, 17th Oct., 1890.
Re SMOKE NUISANCE.

SIR,—I have taken an observation this afternoon of your Bayley-street Mill, which was highly satisfactory. I also noticed your Bridge-street chimney,

which at times was very bad. [This mill had not then been fitted with the appliance.] Below I give result of Bayley-street observations.

To Mr. R. Byrom. JOSEPH OLIVER.

BAYLEY-STREET MILL CHIMNEY, FROM 3.35 to 4.35.

	Dense.	Mod.	None.
3-35 to 3-37	—	2	—
3-37 „ 3-47	—	—	10
3-47 „ 3-49	—	2	—
3-49 „ 3-52	—	—	3
3-52 „ 3-53	—	1	—
3-53 „ 3-56	—	—	3
3-56 „ 3-58	—	2	—
3-58 „ 4-5	—	—	7
4-5 „ 4-9	—	4	—
4-9 „ 4-16	—	—	7
4-16 „ 4-20	—	4	—
4-20 „ 4-26	—	—	6
4-26 „ 4-28	—	2	—
4-28 „ 4-35	—	—	7
Total 60 minutes..	0	17	43

The moderate smoke was very light indeed.

J. OLIVER, Inspector.

It will be obvious that so far as the new device accomplishes the purpose of its invention it will be directly advantageous. It will also be equally obvious that several indirect benefits will ensue, resulting from the more perfect combustion of the fuel used. Amongst these may be named a great economy in the fuel. We believe no scientific or careful tests have yet been made, but ordinary working reveals the fact that with a reduction of 5 per cent. in the quantity consumed, and the lower quality of slack that can now be substituted, a considerable saving upon the coal bill is being made. Looked at from another side: with the same quality of coal in use five boilers could easily be made to do the work six were doing before. From whichever view the matter is regarded it will be clear that the saving effected will very speedily pay for the cost of the improved arrangement.

In the light of the facts stated we have pleasure in recommending this invention to the notice and careful examination of all steam users. The boilers of Bayley-street Mills can be inspected at work any week-day during working hours on application to Mr. F. Bayley, the owner, who will also afford any other information that may be desired.

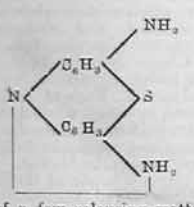
Bleaching, Dyeing, Printing, etc.

THE COAL-TAR COLOURING MATTERS.

(Continued from page 355.)

THIONINE COLOURS.

THIONINE



is the base of a few colouring matters whose characteristic is that they contain sulphur. The original and parent dye-stuff is known as Lauth's violet, and is the hydrochloride of the above base. (Thionine itself is not known.) Lauth's violet is prepared from paraphenylene diamine by oxidation with ferric chloride in the presence of sulphuretted hydrogen. Of itself it is of very little use. There are but few colouring matters belonging to this group; the most important is methylene blue, which is the hydrochloride of tetramethylthionin, and has the formula :—$N : (C_6H_3)_2SN(CH_3)_2Cl$. It is one of the purest blues known, dyeing a fine and bright shade of greenish blue. It is but little used in wool and silk dyeing; on cotton it is applied in various ways: tannin and alumina mordant on oiled cotton, or tartar emetic may be used. It is also useful in calico printing, on which it may be printed with a tannin mordant.

PHENOL DYE-STUFFS.

Phenol C_6H_5OH, cresol C_7H_7OH, and naphthol $C_{10}H_7OH$, dioxynaphthalene $C_{10}H_6(OH_2)$ belong to a group of organic compounds called phenols, which are combinations of organic radicles with the hydroxyl. They possess pseudo-acid properties inasmuch as with caustic alkalies they form phenolates; on the other hand they partake somewhat of the nature of alcohols in many of their reactions. They are extremely useful in the manufacture of colouring matters, and enter very largely—especially naphthol—in the production of the azo-colours, which have already been dealt with. There are four classes of phenolic colours that remain for consideration here: 1st, Nitro derivatives; 2nd, nitroso derivatives; 3rd, aurine and corallin: 4th, phthaleins.

1ST. NITROPHENOLS.

When the phenols are treated with nitric acid they are converted into nitro bodies, such as trinitrophenol $C_6H_2(NO_2)_3OH$, nitro naphthol $C_{10}H_6NO_2OH$. These have some colouring power, and hence are used as dye-stuffs. Picric acid, trinitrophenol, Manchester or naphthol yellow, dinitronaphthol $C_{10}H_5OH(NO_2)_2$ or rather its potassium salt, Victoria yellow, the potassium salt of dinitro-cresol $C_6H_2CH_3OH\ (NO_2)'$, heliochrysin or sun-gold, sodium salt of tetranitronaphthol $C_{12}H_3(NO_2)_4OH$, aurantia, the ammonia salt of hexanitrodiphenylamine $N2C_6H_1(NO_2)_3H$, aurotine tetranitrophenolphthalein—all belong to this group. They are suitable only for dyeing wool and silk, for which they have great affinity, mostly dyeing them yellows of rather brilliant tints. They are not fast colours, although they possess a considerable amount of resistance to light, air, and other causes of injurious effects.

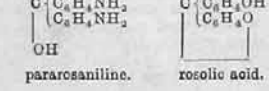
2ND. NITROSOPHENOLS.

When phenols are acted upon by nitrous acid, HNO_2, they are converted into nitroso bodies, the characteristic feature of which is that they contain the group NO. There are but few dye-stuffs belonging to this group. Resorcin green, dinitrosoresorcin, $C_6H_3(ONOH)_2$; gambine R and Y, nitroso-naphthol, C_9H_6NOOH, gambine B, nitrosodioxynaphthene, dioxine, nitrosodioxynaphthalene, naphthol green, the ferrous sodium salt of nitroso-b-naphthol mono-sulphonic acid, $Fe(C_{10}H_5ONOSO_3Na)_2$. With the exception of the last named, which dyes wool from an acid bath, all the nitroso dyes are adjective colours; they will dye only on mordanted wool, and give different shades with different mordants. Thus the gambines and dioxine with chrome mordants give brown shades, gambine R and Y and dioxine reddish browns, and gambine B olive browns; with iron mordants greens are obtained. They are very useful dyes, as the shades given are very fast. It is interesting to notice the difference in shade produced by gambine B and dioxine, although they are both nitroso dioxynaphthalenes. This is one instance, but there are many such, of the existence of what the chemist calls isomers—bodies having the same chemical composition, but having different properties.

3RD. AURINE.

Aurine has long been known, and was one of the first of the coal-tar colours to come into importance. It is not, however, used to the same extent now as formerly, having been replaced by other more permanent dyes.

Commercial aurine is a rather impure product, but it consists principally of a body known as pararosolic acid, which bears a close relation to rosaniline, as is evidenced by the following formula :—



pararosaniline. rosolic acid.

Rosolic acid can be made from rosaniline, or rosaniline from rosolic acid.

Corallin is a kind of impure aurine, and comes into commerce as yellow and red corallin. The yellow is made from phenol by treatment with sulphuric and oxalic acid; the red is made from the yellow by treatment with ammonia: it is a kind of half-way product between aurine and rosaline. Both corallins have acid properties, and readily combine with sodium or ammonia to form soluble compounds—the "water-soluble" aurines and the "spirit-soluble" aurines are the substances in the free state.

They are rarely used in dyeing, as the shades are very fugitive; in calico printing they are occasionally used, for which purpose they are usually converted into "lakes" and printed on with suitable thickeners, albumen.

(To be continued.)

RECIPES FOR CALICO PRINTERS.

The following are mostly translations from foreign sources. We do not guarantee the results from these recipes, but give them for the purpose of shewing our readers what their foreign competitors are doing :—

DARK BORDEAUX.

630 grms. thickening R (see below),
150 „ alizarine Bordeaux B,
100 „ sulphocyanide of alumina, 12° Be.,
75 „ acetate of lime, 15° Be.,
30 „ olive oil,
16 „ oxalate of tin.

Thickening R.

120 grms. starch,
90 „ acetic acid, 6° Be.,
40 „ olive oil,
150 „ tragacanth liquor, 65 per 1,000,
600 „ water.

By reducing, fine pale and middle shades can be got.

After printing, steam for one hour at 7½ lb. pressure; pass through chalk bath, soap for half an hour, wash, and dry.

DARK NAVY BLUE.

460 grms. thickening S (see below),
190 „ alizarine Bordeaux B,
100 „ acetic acid, 6° Be.,
50 „ olive oil,
200 „ acetate of chrome, 20° Be.

Thickening S.

175 grms. starch,
25 „ pale dextrine,
125 „ acetic acid, 6° Be.,
30 „ olive oil,
145 „ tragacanth liquor, 65 per 1,000,
500 „ water.

Print and treat as above.

DARK BLUE.

590 grms. thickening F (see below),
250 „ alizarine cyanine R,
85 „ acetate of chrome, 20° Be.,
75 „ acetic acid, 6° Be.

Thickening F.

145 grms. starch,
20 „ pale dextrine,
105 „ tragacanth liquor, 65 per 1,000,
105 „ acetic acid, 6° Be.,
25 „ olive oil,
600 „ water.

By reducing 1·1 or 1·4, medium and pale tones are obtained. Print and steam as before.

RED VIOLET.

540 grm. thickening R (see above),
260 „ alizarine cyanine R,
170 „ acetate of alumina, 12° Be.,
50 „ acetic acid, 6° Be.

Print and steam as above.

BLUE.

2 lb. methylene blue standard (see below),
10 „ gum water.

Methylene Blue Standard.

800 grms. water,
400 „ acetic acid, 7½° Be.,
15 „ methylene blue,

Dissolve at the boil, filter, and add

300 grms. gum water,
35 „ tartaric acid,
100 „ tannin solution, 1 kilo. in 1 litre.

GREEN.

1 lb. green standard (see below),
2 „ starch and tragacanth thickening.

Green Standard.

1st colour :—
100 grms. cœrulein,
48 ,, water,
22½ ,, starch.
Boil and add
40 grms. acetic acid, 7½° Be.,
58 ,, Persian berry liq., 30° Be.
Boil, cool, and add
50 grms. tragacanth liq., 50 per 1,000.
2nd colour :—
176 grms. acetate of chrome, 20° Be.,
20 ,, starch,
50 ,, tragacanth liq., 50 in 1,000.
When made mix both colours together.

YELLOW.

50 grms. acetate of alumina, 10° Be.,
50 ,, water,
50 ,, Persian berry ext., 30° Be.,
20 ,, starch.
Boil and add
340 grms. tragacanth liq., 50 per 1,000.
Print, steam, and treat as usual.

WHITE DISCHARGE FOR CHROME-MORDANTED COLOURS.

90 grms. water,
70 ,, British gum,
60 ,, red prussiate of potash,
6 ,, chlorate of potash,
6 ,, chlorate of soda,
120 ,, carbonate of magnesia paste.

FERROCYANIDE OF TIN PASTE.

Take 4 lb. yellow prussiate of potash, dissolve in hot water, add to solution of 5 lb. tin crystals. Filter, wash, and use wet.

ACETATE OF TIN, 27° TW.

Take
6 lb. tin crystals,
4 lb., 3½ oz. acetic acid,
2½ pints water.
Dissolve
4½ lb. acetate of lead, in
3½ quarts water.
Mix the two solutions and allow to settle. The clear fluid is the acetate of tin required.

NEW COLOURING MATTERS.

(Continued from page 373.)

ALIZARINE BORDEAUX B AND G.

These are two new adjective dye-stuffs, dyeing wool mordanted with chrome or alumina. They are sent out in the form of pastes of a brownish colour, the colouring matter in which is but slightly soluble in cold water, although soluble in concentrated sulphuric acid and in caustic soda, there being but little difference in the reactions of the two bodies. On chrome-mordanted wool the B shade dyes a purplish blue, almost reaching a black in the deep shades ; the G shade dyes a more violet tone of colour. They are strong colouring matters, 2 per cent. being enough to give medium shades, which are very useful ; 10 per cent. gives very deep shades. The dyeing process is the same as for all alizarine colours, only the dye-bath must be kept well boiling to ensure the proper development of the colour. The shades are quite fast to light, air, and acids ; they stand boiling in soap very well, there being no loss of colour, and they do not stain any white soaped along with them. Caustic soda has no action. With alumina, dull reds are obtained, which are practically useless.

BENZO BROWN BX AND BNX.

No lengthy notice of these is required, the marks B and BN having been on the market for some time. The new brands are simply improvements on these, giving full and richer tints, B of red brown, BN of brown.

BENZO BLACK.

This new product dyes cotton direct from a dye-bath containing soda. With 2 per cent. of colour bluish greys are obtained ; with larger quantities blackish blues. The shades are turned more blue by acids, and violet by alkalies ; but they stand soaping, and are moderately fast to light and air. On wool dull greyish reds are got, which are useless.

BENZO GREY.

This colour, like benzo black, dyes on cotton from a soda bath. It is perhaps the most useful of the two, giving very nice shades of bluish grey. These are turned blue by strong acids, but are only lightly affected by weak acids ; alkalies turn them purplish. The shades stand boiling in soap ; if anything they are brightened thereby. The dye-stuff itself is sent out in the form of a grey powder, soluble in boiling water to a reddish brown solution. Strong sulphuric acid dissolves it, giving a violet solution which turns first reddish brown, then on adding more water a brown precipitate is obtained.

JET BLACK LIQUID.

Under this name Messrs. Read Holliday and Sons have sent out a special preparation for printing calico. The liquid simply requires mixing with its own volume of thickening, printing on and steaming. It gives a fine, rich black, fast to soaping, which serves equally well for wool or cotton.

WASTE WATERS FROM DYE-HOUSES

An Austrian Factory Inspector in his annual report writes : —"The purification of the dye-house waste waters is effected in a very thorough manner by a velvet factory in my district. The water, coloured with aniline and different vegetable dye-stuffs, often looks like ink, and is purified by a system of cleansing basins. The three basins employed communicate with each other so that the water flows easily from one to the other. The water from the dye-house runs into basin 1, in which it collects during the day, and is allowed to stand for 24 to 30 hours. The greater part of the impurities are deposited, and the upper layer of the water becomes more or less clear. The sluice gate is then opened, and the partially-cleansed liquor escapes into basin 2. During its flow into this, lime water is run in to precipitate the remaining impurities. The contents of basin 2 are allowed to stand for 30 hours, during which time the lime having precipitated out the impurities, it becomes clear. Then it is run into basin 3, and a mixture of sulphate of iron and sulphate of magnesia is run in, and the water is allowed to stand for 30 hours, after which it is run into the river or brook. Dye-houses which have a grass meadow near them can use the water on the irrigation plan : the grass acts as a filter, and retains all impurities, which in turn help to favour the growth of the grass."

IN valuing indigo at the present time it may be taken that each unit per cent. per lb. is worth seven-eighths of a penny; thus a sample of indigo containing 46 per cent. of indigotin would be worth 46×⅞d.=40·2d. per lb. ; 60 per cent. indigo would be worth 52d. per lb.

OUR Continental rivals in dyeing and printing, although so much boast is made of their greater scientific knowledge, make perhaps even more use of special preparations for all kinds of operations than we do. One of the newest we have seen described is "Buanderin," a soap which is said to do wonders in washing and scouring wool, cotton, etc. When we consider that it contains

Fat	.. ..	53·95 per cent.
Ozokerit	.. ..	12·25 ,,
Soda	.. ..	7·58 ,,
Alkaline salts	..	1·26 ,,
Water	.. ..	24·96 ,,

we wonder where the superiority comes in.

A NEW mordant for dyeing black, by means of logwood, is the subject of a patent obtained by Mr. Marriott, of Huddersfield. He takes a certain proportion of copperas and bluestone, and mixes them with sufficient soda crystals to well neutralise the sulphuric acid in the two metallic salts named, the mixture being heated in an iron pan ; they melt, carbonic acid gas is evolved, and a mixture of sulphate of soda and oxides of iron and copper is left ; then a quantity of oxalic acid is added, which converts the oxides into oxalates ; after drying, the mixture is ground up and is ready for use. To use this for dyeing blacks, from 7 to 12 per cent. of it is added to the dye-bath containing the logwood, etc. The neutral properties of this mordant allow it to be used continuously in the dye-bath along with the dyewoods, without emptying or wasting the dye liquid, thus saving dyewoods, fuel, and time.

HARDNESS OF WATER.—When natural waters contain much magnesium salts, the determination of the hardness by Clarke's Soap Test becomes exceedingly difficult. To get over this difficulty, Neugebauer proposes to make a standard hard water by mixing eight volumes of a 12° solution of calcium sulphate with two volumes of a 12° solution of magnesium sulphate, such a mixture representing an average hard water. The soap solution is made of such a strength that 12 c.c. produces a lather in 100 cc. of this mixture. By reducing the 12° mixture with various quantities of distilled water, solutions of various degrees of hardness, 1°—12° can be made, and the soap solution can be tested against these. The test is carried out in the usual way.

EVERY dyer knows primuline, a yellow dye-stuff which possesses the peculiarity that after dyeing on the fibre it can be converted into fast red, brown, and orange colours. One of the most astonishing features about this colour is that the original introducers never seem to have done anything with it, while two other English firms have used it as a source of useful colours, and several German firms have succeeded in extracting colours from it. A patent just taken out by a German firm covers the production of several new things from primuline. In the first place, by what is called alkylating it, they produce purer yellows which stand soaping better ; then by taking the base, diazotising it, and combining with the base, or, better, with its sulphonic acids, they produce direct-dyeing colours. Primuline is a mixture of compounds of several bases, one of which is thioparatoluidine, a body used by an English firm as the base for a series of very useful substantive cotton colours.

DYE-STUFFS that resemble the Congo red in their property of dyeing unmordanted cotton are continually increasing in number, and bid fair to become the largest and most important group of colouring matters at the disposal of the dyer. Lately there has been patented the production and use of a new base which the patentees call "diamido diphenylene ketoxine." It is an orange to yellowish brown substance, very slightly soluble in water, soluble in alcohol and ether, in dilute mineral acids, and in strong acetic acid. By adding hydrochloric acid to the aqueous solution the hydrochlorate of the new base is precipitated. It is soluble also in alkalies, by treatment with nitrous acid in the usual way it becomes azotised and then it can be combined with phenols, amines and their sulpho acids, forming a group of direct-dyeing cotton colours. With sodium naphthionate it gives a red, with salicylic acid an orange-yellow, with naphthol sulphonic acid a violet brown, and with naphthol disulphonic acid a blue. Whether these new dye-stuffs are better than the older ones is not stated.

VALANSOT, of Lyons, patents a machine for dyeing velvets or other pile fabrics. One difficulty which has to be encountered in dyeing pile fabrics, is that of preventing the pile from becoming crushed, thus destroying its beauty. When crushed it is also very troublesome to raise again, thereby increasing the difficulties of finishing it. The new machine seeks to obviate these drawbacks, and does so in a simple and efficient manner, the only apparent objection being that it takes rather a large quantity of dye liquor. The essential feature consists of two discs, placed on a central spindle. Each of these discs carries eight arms, in which a number of notches or holes have been made at regular intervals apart, and into these notches or holes are placed a number of loose, movable rods. The piece to be dyed is fastened to one of the innermost rods, and is carried round the others in a spiral form, no part of the fabric touching another part, so that the pile is not crushed. When filled the frame and the piece to be dyed are placed in a vat of dye liquor and the operation of dyeing is carried on, the frame being revolved by hand or power until the piece is well dyed. The piece need not be taken off the frame until it is washed, scoured, dried, stiffened, and finished. There is one point to be noted, namely, the possibility that where the rods touch the fabric marks will result, but this is not probable and can easily be got over.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, NOV. 22ND.

The most important event in the dry goods world of late has undoubtedly been the action brought by Messrs. Briggs, Priestley, and Co., of Bradford, England, against the jobbing house of Adams and Flanigan. Attention has been principally called to this matter by the *Dry Goods Economist*, which has for some time been conducting a vigorous crusade against the unscrupulous pirating of designs and trade marks carried on by American manufacturers and distributors. Messrs. Priestley's black dress fabrics are as well known here as in the United Kingdom, and their excellence is recognised by every lady in the land. With the object of protecting the public against dishonest practices, the manufacturers made up their pieces some time ago in a peculiar manner, a varnished board being used for the purpose of wrapping the cloth round. It was found, however, that some retailers used Priestley's old boards, round which imitation goods were wrapped, ordinary black domestics being thus sold as genuine Priestley goods. Supporting the complaints of Messrs. Priestley were affidavits, which really left the judge no option but to decide against the defendants.

Mr. A. Howard Hopping, a member of the firm of W. G. Hitchcock and Co., Messrs. Priestley's American agents, speaks in his affidavit as follows:—

B. Priestley and Company are manufacturers of dress goods at Bradford, England, and all goods manufactured by them and sold in this country are sold through us. We have caused the plaintiffs' goods to be advertised extensively in the city of New York and elsewhere, and the goods have acquired a reputation in the city of New York, and generally throughout the United States, and are everywhere known as Priestley's goods. Because of the uniform excellence and desirability of the goods manufactured by the plaintiffs, and the excellent reputation they have acquired, we have always been careful to designate plaintiffs' goods as Priestley's, and our customers in the retail trade have done the same, and the public generally have become acquainted with the quality and character of the plaintiffs' goods, and know them as Priestley's.

Mr. Hopping then proceeds to detail the fact that the defendants in this case advertised in the New York *Herald* the Priestley goods at prices which he knew they could not be sold for, and that he caused his agent to go to the defendants' store and buy some of these goods, and winds up by stating that he knows of his own knowledge that the goods thus sold as Priestley's were not manufactured by B. Priestley and Co.

The affidavits of the lady purchasers of these goods, are also included, and altogether so strong a case was presented that Judge M. J. O'Brien, of the Supreme Court, immediately granted the injunction prayed for.

Suits have been commenced by Messrs. Hitchcock in Chicago, against the prominent retailing houses of P. F. Ryan and Co. and H. J. Furber and Co.; they have ordered the institution of a similar suit againt A. Z. Salomon and Co., Denver, Col., and intend to do the same in San Francisco and elsewhere, as soon as the cases are thoroughly prepared.

It seems ridiculous that, favoured as they are by such extreme protection, American manufacturers must needs swindle the public and rob English firms by forgery of the most unblushing description. Surely an industry which cannot compete with outsiders already handicapped by a high tariff does not deserve to live.

Mr. Arthur Hind, the well-known Bradford manufacturer of dress silks, seal plushes, etc., returned to Great Britain in the S.S. "Britannic" this week. Before sailing, Mr. Hind closed a contract for the purchase of an extensive mill in the vicinity of Utica, N.Y., which he intends to operate for the manufacture of seal plushes and dress goods.

Mr. Edward Hollingworth, of the English firm of Messrs. Hutchinson, Hollingworth, and Co., is on his third visit to this country, and is the guest of C. H. Hutchins, president of the Knowles Loom Works, Worcester. Mr. Hollingworth is a member of the celebrated firm of machine builders in England, who have been building looms for the last 30 years. In the year 1883 they began to build the Knowles open shed fancy looms for England and foreign countries, under licence from J. L. Knowles and Bro., and, after a year of hard work trying to introduce the quick-speed loom into England, they succeeded in making great headway, and from that time they have made such strides in their business that for a part of the time they have been unable to fill their orders, although they have frequently enlarged their plant, and have been constant purchasers of new and improved special American machinery, together with every modern appliance they could procure in foreign countries, Worcester having received many orders for machine tools for this firm. The building and introduction into the European market of a loom so radically different from what had ever been known there before was a great undertaking, but the loom has not been confined to the old country alone. The firm has built and put into operation since 1884 over 8,000 woollen and worsted looms on the Knowles system. There has been established between the two firms the closest intimacy and harmonious relations, so that Messrs. Hutchinson, Hollingworth, and Co. and the Knowles works have the full benfit of the thought and inventive genius of each firm.

With reference to the Canadian cotton trade and the syndicate talked about not long ago, it is stated that many of the mills are not paying, and that one factory at Kingston has refused to have anything to do with a combination.

The wash silks shewn here are, according to some authorities, largely composed of ramie, and it is affirmed that Pongee 'silks' are commonly made wholly of ramie, but are always calendered.

With reference to the failure of Messrs. John T. Walker, Son, and Co., who were the largest raw silk importers in this country, the elder Mr. Walker has been identified with the silk industry here almost since its foundation. He was brought up in the Chinese branch of the trade in England, where he was born, and came to the United States in the forties. He then went to China, where he established valuable connections, and returning to America he established himself in business, in 1849, under the firm name of Chase, Goodridge, and Walker. Afterwards the firm name became Goodridge and Walker, and then John T. Walker, which style was retained until he admitted his son and Mr. Coombs as partners, in 1881. It is believed that the firm made considerable money by last year's rise in prices, and on January 1st, 1890, their capital was stated as being 400,000 dols., 100,000 dols. having been added on that date.

Following is a condensed account of the results of recent earnings at Fall River:—

Narragansett Mills: Net earnings for the year, 60,950 dols.; amount paid in dividends (6½ per cent.), 26,000 dols.; present indebtedness, 80,737 dols.; expended in new machinery, 174,504 dols.

Hargaves Mill: Earnings for the year, 63,883 dols.; dividends paid, 6 per cent., 24,000 dols.; new machinery, 12,003 dols.; decrease in debt for the year, 27,884 dols. The net indebtedness is 107,671 dols.

King Philip Mills: Net earnings for the year, 169,368 dols.; amount paid out in dividends, 60,000 dols.; present indebtedness, 58,336 dols.; expended in new machinery, 100,000 dols.

The American Linen Mill: The report of the treasurer shewed that the largest part of the earnings had been expended in alterations, new boilers, and new machinery, all entailing many days' idleness. Fifty-six thousand dollars were paid in dividends, and about 40,000 dols. charged off to depreciation.

The Border City Mill: Net earnings for the year, 121,451 dols.; dividends paid, 80,000 dols.; improvements, 40,000 dols.; repairs, 29,209 dols.; quick assets over liabilities, 47,526 dols. A dividend of two per cent. was declared.

Flint Mills: The report of the treasurer shews the net earnings of the mill to be 67,778 dols.; dividends paid out (9 per cent.), 52,200 dols.; added to surplus during the year, 15,578 dols.; present surplus, 55,270 dols.

Metocomet Mill: No dividend declared.

News in Brief.

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Atherton.

It has been finally decided by the directors of the Albion Spinning Company, not to erect a new mill in place of the one burnt down last Christmas.

Bolton.

Mr. Edward Cross, a member of the firm of Messrs. Horrocksex, Crewdson, Crosses, and Co., cotton spinners and manufacturers, died at his residence on Friday night of last week, after a painful illness. He was in his 56th year.

The committee of the Mechanics' Institution acknowledge with thanks the receipt of an intimation from Messrs. John Haslam and Co., manufacturers, to the effect that they will be glad to renew their offer of £5 to be given in prizes to the students of the weaving and pattern designing classes.

The card-room hands and a few friends employed by Mr. W. Tristram, cotton spinner and manufacturer, Halliwell, assembled together on Saturday and presented their late carder, Mr. Edmund Hardman, who is retiring through failing health, with a purse of gold as a token of their esteem. After tea, Mr. Brereton, manager, made the presentation on behalf of the card and blowing-room hands.

A disastrous fire occurred on Wednesday morning at Messrs. Charles Taylor and Brothers' cotton mill. The fire broke out in one of the mules in the third storey of the mill. The sprinklers operated, but were unequal to suppressing the outbreak, and the fire brigade were sent for. The damage is estimated at £3,000.

On Wednesday evening Miss A. E. F. Barlow, of Edgeworth, delivered a lecture on "Egypt," before the workpeople of Messrs. Barlow and Jones, Limited, Mr. John R. Barlow, J.P., presiding. In the course of the subject, Miss Barlow dealt with a variety of the customs and occupations of the Egyptians, giving an interesting and instructive account of the cotton crop and cotton growing, and also of a "ginning factory."

Coventry.

Early on Wednesday morning the vast pile of buildings at Coventry known as the Coventry Cotton Mill, was completely destroyed by fire. The damage is estimated at £30,000, and several hundred hands are thrown out of employment by the disaster.

Halifax.

A meeting of representatives of the Halifax Town Council, Chamber of Commerce, Mechanics' Institute, School of Art, and Technical Institute took place on Wednesday at the Town Hall, to consider means for extending technical instruction in the town. The ex-Mayor (Alderman James Booth) presided. It was stated that a committee of the Mechanics' Institute had reported that the present building had become inadequate. After some discussion, the following gentlemen were appointed as a committee, to consider the question and report as to what steps should be taken in the matter, namely:—The Mayor (Alderman Davies), Alderman James Booth, Mr. L. Clayton, the Rev. F. E. Millson, Mr. John Mitchell, Mr. C. J. Fox, Mr. Sutcliffe, Mr. T. S. Scarborough, and Mr. John William Ward.

Heckmondwike.

The following is the trade report of the Chamber of Commerce for November:—"Railway rugs: Fringed rugs seem to take the lead, the cold weather stimulating business. Sealskin: Trade is quiet. A small business is being done in plushettes for furnishing purposes. Cotton warps: Prices tending down, with very little demand. Yarns: Fully employed during the month, but quiet during the latter part of the month. Wool: At the recent public sales of East India wools in Liverpool prices of best soft whites suitable for the American market were ¼d. to ¾d. per lb. lower, owing to the increased demand from the United States. Blankets: This month business with us has been of the same character as that of October. We have continued well employed through the month in all departments and have also an equally favourable prospect in view for the coming month. Carpets: Orders are being held back, owing to the firm stand made for

prices, and trade is fully two months later. Prices of medium and low blanket wools brought fully last sale's rates, and in some cases ¼d. to ½d. per lb. more. Dyewares: The demand is rather less, but prices remain firm. Machine-makers: Trade quiet as usual this month."

Huddersfield.

At the Borough Police-court, on Monday, Messrs. Taylor Brothers, manufacturers, Northfield Mills, Almondbury, were summoned for employing five "young persons" after the end of the lawful period for such employment. The defendants pleaded guilty, but stated that they were working overtime in order to get out certain home orders which had been delayed in consequence of the pressure upon them occasioned by the McKinley Tariff coming into operation, and their desire to get as many goods into America as they could before the 1st of October. Defendants, who had been previously convicted, were fined £3 and 7s. costs in each case.

Kidderminster.

Several carpet men have this week come in from the States; amongst these are Mr. Albert Cowell (The Manufacturing Company), Mr. Bernard Eck (Worth and Sons), and Mr. R. Ransome (Green and Son). Business is spoken of as having been brisk.

Leeds.

Smelthouse Mill, near Pateley Bridge, one of the oldest of the several flax spinning mills of the neighbourhood, was destroyed by fire at midnight on Monday. The damage is estimated at £2,000, partially insured. The mill is the property of Mr. William Yates.

London.

A receiving order having been made on the 11th ult. against Petrus Mondon, a silk importer, carrying on an extensive business in Falcon-square, City, and at Lyons, the debtor has now submitted a statement of his affairs, which returns his liabilities at £104,471, of which £66,229 will probably rank, with assets £28,942. The debtor commenced business in 1862, and he attributes his failure to loss through defalcations by his cashier, to the bad state of trade, to bad debts, and also to depreciation in the value of his freehold and leasehold properties. He has filed an account shewing how the present deficiency of £37,287 arises, and intimates his intention to submit a proposal to his creditors on the 17th inst.

Manchester.

The Technical School Committee of the Ashton-under-Lyne Corporation and a few friends visited the Technical School in Princess-street, and afterwards the one in Peter-street, on Tuesday night last. The arrangements were carried out by Messrs. Edwin Barlow and E. Stringer. Mr. Reynolds, the secretary of the school, kindly conducted the deputation and friends over both schools. The company included the Mayor and ex-Mayor of Ashton; Councillors Bromley, Bradley, Allen, and Shaw; Messrs. Jas. Holmes, J. B. Pownall, Wm. Walton, W. H. Carr (Secretary of Card and Blowing-room Association), and W. S. Hannan. Votes of thanks were passed to Mr. Reynolds for his courteous reception of the visitors.

Nottingham.

Mr. Arnold Morley, M.P., has recently forwarded to the Town Clerk of Nottingham, to be deposited in the Castle Museum or some public library in the town, a collection of documents of considerable interest and importance for the student of local history. They consist chiefly of manuscript letters purporting to be the original reports of two gentlemen, Messrs. N. Conant and Robert Baker, sent down by the Home Office in 1812, to enquire into the disturbances which took place in Nottingham and the district in that year. The documents bear every internal mark of authenticity, and as the testimony of eye-witnesses of undoubted veracity and intelligence, they have a very special value. The disturbances arose from serious differences between the framework-knitters of the town and neighbourhood during that somewhat turbulent period, involving, among other disastrous consequences, the destruction of a large number of stocking frames. The collection also includes a printed handbill addressed to the framework-knitters by a "sincere well-wisher," conjuring them to discourage the outrages as subversive of their own interests, no less than those of their employers; and a written "declaration" by the framework-knitters claiming "the privilege, by charter, of breaking frames, fabricating articles in a fraudulent and deceitful manner, and offering rewards for the capture of the villains," who were hired to traduce or rob them or their "friends." The papers throw considerable light on an eventful period in the annals of our town. They will be placed in the care of Mr. Potter Briscoe, Chief Librarian of the University College Free Library.

Oldham.

Mr. John Blakeman has been appointed mule overlooker at the Ivy Spinning Company.

Preparations are being made for laying in the foundations of the new mill for the Royal Spinning Company.

Rumours are in circulation of the formation of more companies for the building of mills and the taking over of premises owned by private spinners.

Mr. J. H. Nobles, of Oldham, has been appointed fire assessor to settle the claim caused through the recent disastrous fire at Cromford Mill, Derbyshire.

Mr. John Rowland, of Gresham Mill, has given orders for his premises to be protected with the "Witter" sprinkler.

It is reported that Messrs. John Clegg and Sons, Limited, Shaw, contemplate putting down further spinning machinery, additions having recently been completed which will allow of this being carriep out.

For some time now the directors of the Lees Union Mill Company have been having the machinery overhauled, and where thought advisable placing in new mules, and where possible also making additions. Following on these lines they have decided upon putting in an additional pair of weft mules.

The following local gentlemen are promoters of the Silver Kandy (Ceylon) Tea Company, Limited, with a capital of £20,000, to take over all or any part of the estate known as "Dukinfield," otherwise "Silver Kandy," situate at Udapusellawa, in the central province of Ceylon, and the business of tea, coffee, and cinchona planters, in connection therewith:—Messrs. A. Crompton, cotton spinner, High Crompton; J.K. Stoney, machinist (Messrs. Asa Lees and Co.); Jno. Clegg, cotton spinner; E. Schofield, Hollinwood, and S. R. Platt, mechanical engineer, (Messrs. Platt Bros. and Co.).

There is considerable complaining just now by those connected with the new cotton mills of the difficulty in obtaining deliveries of machinery. This is causing attention in some directions to be given to outside makers, and from conversations with several Oldham gentlemen we gather that they are likely to receive more consideration in future when orders are given out than they have done in the past. Only the other day the directors of the Lees Union Mill Company placed an order for a pair of mules with Messrs. Hetherington. Of course, this is only a small order, but it shews that the prejudice against makers outside the borough is being broken down.

Mr. George Butterworth, of Yazoo City, Mississippi, writes to his father, Mr. John Butterworth, of Shaw, a well-known authority on cotton and cotton spinning, respecting the cotton crop:—"Has not the very bottom dropped out of the market? New Orleans to-day (November 5th, 1890) is virtually on future quotation at 9 cents—4½d.—but I am not at all surprised. I know, beyond question of a doubt, much more cotton will be made in our section than was last year, on same acreage. Several parties I know personally will make from 15 to 20 per cent. more, and such beautiful weather for picking. If the weather of the last three weeks continues five weeks more we will make nearer 8,000,000 bales than 7,500,000. Should a spell of bad, rainy weather come now the crop is in such a particular fix that very great damage would be done. The bolls are opened, and the cotton hanging out loose, almost ready to drop to the ground, so you can readily see what even a light rain would do; but the days are just beautiful, cloudless skies, bright sunshine, and just cool enough to be exhilirating and bracing, and give one an appetite for work."

The wages agitation on the part of the Oldham cotton operatives has resulted in the employers conceding an all-round advance of 5 per cent., to come into operation on the first pay day in January next. The male datal hands in the preparatory departments, however, are dissatisfied, inasmuch as they asked for a 10 per cent. advance, which the masters declined to comply with. As a consequence, this class of hands have tendered their formal notices to leave work unless the advance asked for is granted. This is how matters stand at present, and the Card and Blowing Operatives' Association shews fight. In the Oldham district the number of hands who are affected is about 2,000 (members and non-members of the association). Thus the employers have a difficulty to face—namely, with two sections of the hands satisfied with their treatment, while another section is in mutiny because they have got more than anybody else. If it is forced to an issue, the question is—will the mills be brought to a standstill? It now remains to be seen how the employers will deal with the new difficulty. There is also a phase of the spinners' position worthy of mention. It is this—that should any employer in the Oldham district not comply with the 5 per cent. advance, and a strike ensues, that 10 per cent. be asked for, the additional 5 per cent. being a penalty for non-compliance. Warning is also given that should trade continue profitable another 5 per cent. will be demanded next summer, thus placing the spinners in the position they occupied in 1876.

A careful calculation of the effect of the advance upon the aggregate amount paid in Oldham and district produces some interesting figures. There are in the district 11,047,747 spindles, and the average amount of money paid in wages is about 3s. per spindle per annum. This shews that the large sum of £1,656,146 is being paid annually to the factory operatives. An advance of five per cent., therefore, means that they will receive from the employers £82,807 more per annum than they have at present.

It is apparent that the Oldham Spinning Companies will have a heavier load to carry during the next twelve months than they had the last. The great increase in the price of coal added considerably to the cost of working, and now there is the five per cent. increase in the operatives' wages, and added to this is that they are being compelled, through difficulty in obtaining the requisite loan money with which to work their concerns, to give a higher rate of interest. For some time now the latter increase has been going on, and companies which are in a strong financial position have been necessitated to adopt this course. Some time ago 2½, 3, and 3½ per cent. were the rates paid, but 4 per cent. seems now the average, and it would seem that it will go higher.

Here is a stiff bit of criticism by a local contemporary of how the "oracle" is worked by limited companies:—"It is being said in Royton that there is little chance of a company in that neighbourhood becoming successful so long as it is made use of as it is at present to find work for the relatives and friends of the directors, irrespective of capacity. As an illustration of the extent to which this is being carried out, it is stated that the chairman and manager of the company are brothers, another director and the warehouseman are brothers, while the assistant secretary, the lodgekeeper, and two others are sons and sons-in-law of a third director. We have no doubt that this is a very happy family, but is it conducive to the interests of the company? One of the very first things which the manager of one of the most successful companies in Royton did on taking up his present position was to clear out all the relatives of the directors who were employed by the company. This he did on principle, and in the interests of the company, and a similar policy would be of great benefit to the company first referred to. Let the shareholders see to it if they wish the concern to progress."

Preston.

The employés of Messrs. Hampson, Fish, and Co., Swillbrook Mill, met together on Saturday evening, and presented their late weaving manager, Mr. Thomas Calvert, with a testimonial in the shape of a massive marble timepiece as a token of their respect on his leaving the firm.

Padiham.

At a well-attended meeting of card-room operatives held at Padiham, on Wednesday night, to consider the present agitation for increased wages, and the decision of the Bolton and Oldham employers, the following resolution was unanimously passed:—"That this meeting of card and blowing-room operatives regrets that the Bolton and Oldham employers have not seen their way to grant the full advance asked for, but trusts that the operatives will at once take steps to obtain such, and we hereby pledge ourselves to give them our hearty support in any struggle that may take place."

Shaw.

The Ash Spinning Company are making preparation in their cardroom for the manufacture of coloured goods.

Mr. Samuel Truscott, of Todmorden, has been appointed managing carder at Messrs. A. and A. Crompton and Co.'s, Limited, hard twist manufacturers, Park and Woodend Mills, rendered vacant by the resignation of Mr. Jos. Whitehead.

Warrington.

The death took place at Chester, on Tuesday, of Mr. Samuel Rigby, of Warrington, in his 75th year. Mr. Rigby, who was a cotton merchant here, went some years ago to reside at Chester, where he took an active part in religious, philanthropic, and political work. He was a director of the Lancashire and Yorkshire Bank and a deacon of the Northgate Congregational Church, Chester.

SCOTLAND.

Dundee.

On Tuesday at breakfast-time the bleachers at Balmuirfield (Messrs. D. Moodie and Co.), to the number of about 30, came out on strike in consequence of the firm refusing to pay their wages weekly instead of fortnightly.

Galashiels.

Mr. Adam Cochrane died suddenly on Saturday morning at his residence, Fernicknowe, Galashiels, in the 59th year of his age. He was senior partner in the firm of J. and W. Cochrane, woollen manufacturers, Mid Mill, one of the oldest firms in the town, formed by two sons of Adam Cochrane, who, along with others, built Mid Mill in 1792, over the site of the third waulkmill in Galashiels, erected in 1651. The deceased, who for about a year past has suffered from disease of the heart, expired somewhat suddenly on Saturday morning. In the business of the South of Scotland Chamber of Commerce he for years took a heavy share, whether as president or ordinary member. When Galashiels was formed into a burgh under the General Police and Improvement Act (1862) he sat as a Commissioner and magistrate for some time. He was one of the Justices of the Peace for Selkirkshire, and was a Liberal Unionist in politics. His love for Borderland legends, ballads, and literature was unusually strong. For some years past his business pressed but lightly upon him, and he travelled a good deal. Deceased is survived by a widow and five sons and two daughters, the eldest three sons being members of the firm.

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.	United States and Canada.	W. Indies and South America.	Austra-lasia.	Conti-nent.	Totals.	Totals previous week.
£	£	£	£	£	£	£
43,150	8,673	995	1,735	852	54,615	138,307
—	11,491	2,803	799	307	15,400	7,674

Reviews of Books.

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

History of the Parish of Ribchester. By Tom C. Smith and the Rev. Jonathan Short, B.A. London: Bemrose and Sons; Preston: C. W. Whitehead.

The subject selected by the joint authors of this book is one of the most interesting of its kind in Lancashire. The history of Ribchester, the Roman station on the Ribble, which is situated about four miles to the north of Blackburn, begins in the days of the Romans, by whom, according to our authors, it was founded in or about A.D. 124, a date which probably approximates as nearly to the fact as any that has yet been fixed upon. It is satisfactory to think that the researches of antiquarians have at last enabled them to decide with some degree of certainty upon the name by which it was known in the days of the imperial conquerors: this was 'Bremetonacum.' The meaning of this designation, or whence derived, will not be easily solved; that given in the text suggested by Monsignor Gradwell, of Stonyhurst, is in several points quite unsatisfactory. There is clear evidence that the Romans, in many instances, adopted native designations, latinising or attaching to them prefixes and termination from their own tongue. Monsignor Gradwell, of Stonyhurst, assumes that they did so in this instance, and hence gives an explanation which we believe to be entirely unsupported by the facts. To derive the first syllable of the name from the British or Cymric word bryn, meaning a hill, is hardly permissible, when considered in connection with the site of Ribchester, which is on a small alluvial plain at the bottom of a wide valley, and on the bank of the river. *Bryn* is simply a common appellation which, when applied to a locality, is nearly always accompanied by its specific adjective. The place-names of Wales to-day afford numerous illustrations of this statement. In all Cymric names there is a peculiar and beautiful appropriateness: they are strictly accurate as descriptives, and very often poetically beautiful. Did our space permit we could adduce many illustrations of this truth. That a people distinguished for such accuracy should attach this common noun to a low-lying flat plot of land, and that in a country where the "bryns" surrounded them on every hand, is inconceivable and must be rejected. The Monsignor is not more successful in our opinion in dealing with "meton," the next portion of the word, which he says in the Breton tongue signifies the equivalent of our "reynard," the fox. The carnivora of pre-Roman and Roman days in the district of Ribblesdale would be of a fiercer character than the fox, being much more likely the bear, wild boar, the wolf, and the badger. The fox would find a more congenial home in the fertile plains of the island, and would not therefore be likely to give its name to any part of the districts in or about Ribchester, at least until a much later date.

Ribchester has no history antecedent to the advent of the Romans; they selected it as a suitable site for a fortress, one of the links in the chain by means of which they held Britain in subjection. It was not of first-class importance, such as Chester, or York, Caerleon, or Silchester, but ranked with the numerous fortified places or camps scattered over the country. For nearly three hundred years it maintained this position, during which time it would no doubt do its share of duty in enabling its founders to repel irruptions of the unconquered northern tribes. These, our authors state, broke through all the opposing forces arrayed against them, marched southwards, and succeeded in burning the fortress in the year 184. The barbarians, however, did not know how to utilise their conquests, and on this occasion would probably content themselves with doing all the damage they could and then retire. It would be no difficult matter for the Romans to repair and restore the place to its former strength. Little is known regarding its subsequent history during their occupancy. Is it to be regretted that, literate as were the conquerors of the then known world, so little of genuine history of their occupancy of the country has come down to the present day. It would have been exceedingly interesting, and have enabled us to take a more accurate measurement of the actual indebtedness of modern England to the civilising influences of its imperial conquerors. By far the greater part of the knowledge we possess, and that is not much, of Roman Ribchester, is derived from the researches of antiquarians and the accidental discoveries of remains.

It is from such scanty materials that we have to draw our estimate of its importance in relation to other stations; of its garrisons and inhabitants and their modes of life. Very little can therefore be stated with assurance. Life in Ribchester was much as it would be in the other chesters scattered over the country. Outside its walls would gather a population composed of the natives, who for protection, employment, or trade would find it to their advantage to make their dwelling there. It is probable that from its foundation to its desertion the place was garrisoned by a portion of the XXth Legion, one of the most celebrated in Roman annals. The garrison was withdrawn A.D. 396. During the next twenty years the entire Roman forces were recalled from the island, the inhabitants being left to the tender mercy of the Picts and Scots, who were not long in pouring their hordes over the Great Wall, and there need be little doubt that the country, depleted of all martial strength, fell an easy prey to its fierce invaders. Very soon every stronghold of the retired masters would fall into their hands and be razed to the ground. We have an impression that this fate befel the deserted camp of Ribchester before the close of the fifth century, though our authors are silent upon the point, unless the statement quoted from Dr. Whittaker, in which mention is made of the discovery of several skeletons beneath the burnt remains of a temple roof, may be assumed to refer to it.

Absolutely nothing is known of the place during the 150 years that elapsed between the departure of the Romans and the emergence of the Saxon Heptarchy from the chaos that soon arose behind them. It is, however, known that Lancashire was not conquered by the Germanic invaders until near the close of the seventh century. During this period it must have been a happy hunting ground for the Picts and Scots, and a land of misery for the natives.

In the Dano-Saxon period comparatively little is known of Lancashire, and, so far as we know, nothing whatever is heard of Ribchester. The sole interest of the place even to this day lies in the fact that it was a Roman station. In the Domesday survey it is mentioned as "Ribelcastre," being no doubt at that time what it has remained ever since—an insignificant village. From the departure of the Romans forward Mr. Smith charges himself with the task of writing the history. This he discharges in the most conscientious manner, according to the canons very widely accepted now-a-days, as to the manner in which local history should be written. We confess, however, that we are in a very dubious state of mind regarding the correctness of this method. Its annals to even most intelligent men would be absolutely destitute of interest. Mr. Smith devotes 35 pages to the general history of Ribchester, and the most interesting items we can find in it is an account of the prosecution of John Cutler, a shopkeeper, for infringing the rights of the trading guilds at Preston by selling flax and linen cloth. These monopolists—it was the Mercers' Company which prosecuted—charged Culter with being a recusant and guilty also of many other crimes and misdemeanours, but these would hardly have been heard of had he not sold cloth and flax to the country people, whom they would have preferred should go eight or ten miles to purchase it from them at Preston. Cutler replied to the charge and got his case remitted to the Commissioners, who decided in his favour. The Mercers' Company, however, appealed, and this decision was reversed, and Cutler bound over in a sum of "Twenty Pounds" to "promes to bye nor sell nether cloth not flax contrary to the law." The date of the bond is "25 September, 1635." We should have been glad to have quoted this case at more length, and also an extract from Cutler's shop book, shewing the character and extent of his dealings in the forbidden articles, but space forbids.

The succeeding chapters, II. to IX., are devoted to the ecclesiastical history of the place, in which those of an antiquarian turn of mind will discover matters of interest, but which the general reader would, we fear, find somewhat tedious reading. The Church itself is an interesting edifice, its earliest portions dating from about 1220, and others from the Decorated period at the time of Edward III. The account is accompanied by an illustration. Similar remarks may be made of the old Stydd Church.

Ribchester and the district immediately surrounding is interesting from a textile point of view as being that in which the old domestic occupation of hand-loom weaving lingered longest. It ceased to be followed about ten or twelve years ago, the last employer we believe being the late Mr. John Smalley, of Mellor, between Blackburn and Ribchester. One of the oldest surviving weavers was the old man who appeared in the Manchester Jubilee Exhibition, weaving on the hand-loom. He was a native of Ribchester, and followed the occupation until it failed him.

To readers having antiquarian proclivities we can recommend the book, and also to those who have any interest in the locality in which Ribchester is situated. They will, we have no doubt, find in its pages much to interest them.

Persian Cotton.—The produce of cotton is widely extended, even in districts which are 5,000 feet above the sea. The staple is short, and the cleansing, as is the case with all Central Asiatic cottons, leaves much to be desired. In the neighbourhood of Ispahan a capital variety of cotton is cultivated, a very white sort. Of the crop of the province of Azarbeidschan, there were sent to Russia in 1887 about 800,000 kilos., and from the other provinces of Northern Persia about 900,000 kilos. The Russian Government distributes Charleston cotton seed, free of cost, to the Persian landowners, in order that Russia may come to be totally independent of the cotton import from America. The import tax on Asiatic cotton is, in Russia, about 10 per cent. less than that on American cotton.

Miscellaneous.

SOMETHING ABOUT INDIA-RUBBER.

The extremely numerous and varied uses to which india-rubber has been adapted in connection with the textile industries will render the following information regarding it of interest and value:—India-rubber is the solidified sap of a tree, principally found in South America. It is of a soft, gummy nature, very elastic, and is easily decomposed by oily substances. Gutta percha, which is found in the East Indies, is obtained from the gutta tree. It is a brownish gum, which solidifies by exposure to the air. There are different varieties of rubber trees and widely different qualities of gum. For many goods only the best of rubber can be used, such as comes from Para, a province of Brazil. But there are rubbers so poor, so dirty, and so sticky that they can be used only in the poorest lasses of goods, or in articles in which elasticity is not an important quality. The second grade in quality is from the Amazon river, on which hundreds of square miles are covered with the forests. There is also a very good quality found on the island of Madagascar. Inferior grades come from Carthagena, Central America, Assam, Java, Borneo, Africa, and other places. These inferior rubbers are sent to the American markets very much adulterated, or rather loaded, with clay, bark, and sand. This is without doubt done by the natives, who are paid so much per pound for gathering it.

The chief occupation in the interior of Brazil has become the gathering of rubber, a business for which the Indian is well adapted. The rubber gatherer makes three or four incisions an inch wide with a narrow hatchet, cutting barely through the bark of the tree. Under each incision he causes a little tin cup to adhere by a bit of moistened clay. Into these cups the borracha (rubber) milk exudes from the wounds. He goes from tree to tree doing the same, until he has tapped as many as he can conveniently attend to in a day. He then returns to the first tree and goes the round again, collecting the milk into a bucket. Each gash will yield from two to three tablespoonfuls of the sap. This will soon coagulate if not "smoked," which process consists in pouring the milk over a paddle or round stick and passing it through the smoke from a fire of palm nuts, which causes it to thicken. More milk is poured upon the paddle, and treated similarly, until the successive coats have made a large ball, often eighteen inches in diameter, called a pelle. The peculiar virtue of the smoke used has not been investigated, but the answer of an Indian that it is "ó pungimento" (the pungency) is significant. The smoke of wood will not serve. Great care is needed in the operation lest part of the rubber should coagulate. When this happens the product is termed "extra fine," which is the middle grade between "borracha fina," the best, and "sernamby," which is the inferior, wholly coagulated material, as it is found oozing from the trees. Efforts are now making to discover means for preserving the milk and shipping it in the fluid state, but some device to insure perfect "smoking" would perhaps be an equally satisfactory solution of the problem if the natives could be taught to use it.

A writer on the method of gathering rubber in Central America says rubber hunters go in companies to the interior at the beginning of the rubber season, each provided with a coil of rope and iron climbers, such as telegraph linemen use. Before beginning operations on his tree each man cuts a few lengths of bamboo in which to catch the milk as it falls from the simple spout he will fix in the side of the tree, or it may be he will dig a hole in the earth close to the base of the hule and catch the milk in that. Then the rope he carries is passed around his waist and the bole to form a loose loop. Having cut two notches which nearly encircle the tree and meet to form a point on the side nearest him, the rubber gatherer sticks a bit of leaf into the junction so formed and the spout is made. With a dexterous flirt he throws the loop of rope up, braces back in it and walks up a step, makes another V-shaped notch, and repeats the operation until the branches are reached.

By the time the topmost cut is made the others are bleeding profusely, and a creamy stream is filling the bamboo. When this is nearly full it is corked by a wad of leaves and set aside to wait until others have caught all the milk that will flow from this cutting.

When the milk ceases to flow each cut in the bark is coated by a thin film, which dries in the course of a few days. The rubber gatherer then climbs the tree again and strips this barnche from the gashes, and winds it into a roll. As it is usually free from adulteration the barnche is considered to be the best of that rubber crop. About once in three months a raft is made of light timber, and the product of the labour of the company is floated down to the seaboard, where dealers are found ready to buy it.

Mr. William Thomson, the well-known chemist of Manchester, at the last meeting of the British Association read the following paper upon this article:—

Under ordinary conditions, india-rubber for vulcanising is usually mixed with sulphur and heated to a high temperature, when chemical combination takes place between the sulphur and the rubber, producing a much more valuable compound for ordinary purposes than unvulcanised rubber; the former remaining soft at very low temperatures and firm at high temperatures, whilst the latter becomes hard and quite plastic respectively at those temperatures.

In making cloth for waterproof garments, another method is employed for vulcanising the rubber, viz., by wetting its surface with a mixture of somewhere about five to ten parts of chloride of sulphur dissolved in 100 parts of bisulphide of carbon, and then heating the fabric gently to evaporate away the excess of these substances; the rubber-covered cloth cannot be heated to a high temperature like the rubber alone, because the heat would be liable to injure the cotton, silk, or wool of the fabric, or destroy or injure the colours.

The bisulphide of carbon softens and penetrates the hue layer of rubber, carrying with it the chloride of sulphur dissolved in it, and it is generally supposed that the chloride of sulphur breaks up, the sulphur combining with the rubber producing vulcanisation, and the chlorine combining with the hydrogen producing hydrochloric acid which is liberated. This reaction is clearly not the correct one, and it is probable that the reverse is more in accordance with the facts, viz., that the chlorine of the sulphur chloride combines with the rubber producing vulcanisation, leaving the sulphur in the free state, or only partially in combination with the rubber, because in rubber vulcanised by the cold process I have found free sulphur to be present.

From a piece of rubber-covered cloth I separated the rubber, and submitted it to analysis, by mixing it thoroughly in small pieces with pure sodium carbonate and igniting, then dissolving the whole in water and adding to it peroxide of hydrogen previously treated with excess of barium chloride (to separate sulphuric acid or sulphate). The peroxide ensures the conversion of the lower oxides of sulphur into sulphuric acid, whilst the excess of barium chlorides precipitates the sulphuric acid in the solution, which is then weighed as barium sulphate.

Another portion of the made-up solution was neutralised, and the chlorine present titrated. The rubber previous to ignition, as above described, had been well boiled in water and dried, to separate any hydrochloric acid which might be present, but only a faint trace of chlorine compound could be thus separated from the rubber.

The total sulphur present in the rubber amounted to 2·60, and the total chlorine to 6·31 per cent.

The yellow-coloured sulphur protochloride is best adapted for vulcanising, because it does not act too strongly upon the rubber, whilst the dark-coloured chloride of sulphur, containing, as it does, a large quantity of the higher chlorides of sulphur, is liable to render the rubber quite hard by vulcanising it too much. The theory generally adopted to explain this is, that these higher chlorides break up easily, liberating their sulphur, which thus combines in greater quantity with the rubber; but my experiments and analyses prove that it is chiefly the chlorine and not the sulphur of the chloride of sulphur which produces the vulcanisation.

A rubber substitute, much used at present, is produced by acting on vegetable oil, such as rape, linseed, etc., with a mixture of chloride of sulphur and bisulphide of carbon; the oil becomes converted into a solid substance resembling india-rubber to some extent, but being much more brittle. This body is now used in large quantity for mixing with india-rubber for the purpose of cheapening its production. On analysis of some samples of this material I have invariably found that it contained a much greater proportion of chlorine than of sulphur, and this process therefore is a vulcanisation by chlorine rather than by sulphur.

Recently I analysed three samples of rubber substitute, the one termed "special" another "spongy" india-rubber substitute, the third being similar to the first in appearance. The first contained of sulphur 3·4 and of chlorine 7·6 per cent.; the second contained of sulphur 4·56 and of chlorine 8·22, and the third 2·67 of sulphur and 7·90 of chlorine per cent.

These rubber substitutes contain considerable quantities of oily matters soluble in ether which I have also found to be chlorine and sulphur compounds of the oils. The first yielded 20·0 per cent., the second 14·3, and the third 11·5 per cent. of these thick oily matters soluble in ether. This oily substance from the first sample contained 2·6 per cent. of sulphur and 6·1 per cent. of chlorine, whilst that from the second contained 2·97 and 6·87 per cent. of sulphur and chlorine respectively.

Some rubber manufacturers regard this oily matter as injurious to the rubber, and reject any substitute which contains any considerable proportion of it. I have found, however, by experiment that this oily compound instead of acting injuriously on india-rubber, actually acts as a preservative of it; some rubber threads were smeared with this oily extract, some with ordinary (unvulcanised) rape oil, and some left untreated; these were put into an incubator at 150° Fahrenheit for a few days when it was found that the oil treated rubber was quite soft and rotten, whilst the other two had remained sound, after a few days more, the original rubber threads had become quite rotten, whilst the threads smeared with the oily part of the vulcanised oil remained quite sound.

The first and second samples of rubber substitute were examined for soluble chlorides or hydrochloric acid, by boiling in water, the first gave 0·18 per cent. of chlorine soluble in water, and the second 0·05 per cent.

It has been known for some time that copper salts exert a most injurious influence on india-rubber, copper salts are sometimes used in dyeing cloth, which are afterwards employed for water proofing with india-rubber, and it seems quite astonishing what a small quantity of copper is required to harden and destroy the rubber, and the destructive effect of copper is further enhanced if the cloth contains oily matters in which the copper has dissolved.

As an example, here is a piece of cloth, alleged to have damaged the thin coating of india-rubber on it: I found it to contain copper, and with a view of demonstrating this point, I took one piece in its original condition, to the end of this I pasted a similar piece of the cloth from which the oily and greasy matters had been removed by ether, and to the end of this again, I pasted another piece of the same cloth, from which I had removed both oily and greasy matters and copper; these three pieces joined end to end into one, were then coated in the usual way with india-rubber, and then hung in an incubator at 150° Fah. In the course of a few days the rubber on the original cloth had become soft, and it then hardened and became rotten and useless; the second piece from which the greasy matters had been removed, then became quite hard and rotten, whilst the part from which both greasy matters and copper had been removed has remained in a perfectly elastic and good condition.

Professor Dewar observed accidentally that metallic copper when heated to the temperature of boiling water in contact with the rubber exerted a destructive effect upon it. With a view of finding whether this was due to the copper *per se*, or to its power of conducting heat more rapidly to the rubber, I laid a sheet of paper on a plate of glass, and on it placed four clean discs, one of copper, one of platinum, one of zinc, and one of silver. After a few days in an incubator at 150° F., the rubber under the copper had become quite hard, that under the platinum had become slightly affected and hardened at different parts, whilst the rubber under the silver and under the zinc remained quite sound and elastic. This would infer that the pure metallic copper had exerted a great oxidising effect on the rubber, the platinum had exerted a slight effect, whilst the zinc and silver respectively had had no injurious influence on it. A still more curious result was this, that the rubber thus hardened by the copper contained no appreciable trace of copper, the copper therefore presumably sets up the oxidising action in the rubber without itself permeating it. I have pleasure in acknowledging the assistance rendered to me in this investigation of my assistant, Mr. Frederick Lewis.

The United States Supreme Court has ruled that imports of cloths popularly known as diagonals are liable to a duty of 24c. per lb. and 35*b*. *ad valorem*, as manufactures of worsteds not otherwise provided for, and not 35c. per lb. and 35c. *ad valorem* as manufactures of wool. These goods are known in the trade as worsteds, and the Court holds that they must therefore be held to be dutiable under the paragraph of the Act relating to worsteds, regardless of the fact that they are a produce of wool.

EIGHT HOURS IN THE COTTON TRADE.

Alderman Ridyard, Mayor of Stalybridge, read a paper on Saturday week before the members of the Young Men's Mutual Improvement Society connected with Holy Trinity Church, Stalybridge. In the course of his remarks, the Mayor alluded to the eight hours' question in relation to the cotton trade as follows:—Let us suppose a mill of 60,000 twist spindles, spinning 32's, and producing probably 1 lb. of yarn per spindle, a full production. Such a mill would pay about £220 a week for wages, about £150 for expenses, and about £70 a week for depreciation. If the hands were paid piecework, and at present rates, their wages would be reduced, but about £30 a week of the wages paid to officials, etc., would still be paid in full, making a weekly charge of £250 for either 56 hours or 48, and the £190 paid to workpeople for 56 hours would be reduced to about £162. The production of 60,000 lb. now bears this charge of £250, or one penny per pound, but the reduced production would be only 51,000 lb., and these charges would be 1·20 pence, or an increase in cost of ·20. But would workpeople expect less money? If not, then the wages would increase the cost by ·15 more. A profit on capital of 6 per cent. would, if it were maintained, be an additional charge of ·07, so the total increased cost would appear to be ·42 pence per lb. But this is not all, for an universal eight hours' bill would mean dearer coal and dearer stores, so that actually a larger amount would be spent each week for 48 hours than had been spent for 56 hours, and the cost of producing 42's would be raised fully one halfpenny per lb. Forty-eight's twist would cost about 1d. per lb. more, and as counts went finer the cost would be further increased. This halfpenny a pound is far more than the average profit, and nearly double that required for the 6 per cent. mentioned. Is it safe? Should we not lose our trade if we thus recklessly increased the cost of our goods? English labour movements must be largely governed by foreign movements and foreign tariffs. The remarks about the eight hours' question apply to this division of the subject, for it is manifest that if foreign nations adopted a policy which raised the price of their yarns one-halfpenny per pound, we need be under no fear in raising our productions. My own opinion is that eight hours is enough for men to work under to-day's conditions, if by doing so the requirements of the world can be supplied; but the wisdom of the action taken by your representatives is more than justified by the position of affairs on the Continent, in America, and in India.

The spinning factory of Schlumberger in the Val-d'Ajol was completely destroyed by fire last week, the damage amounting to 600,000 francs.

Antique Embroideries.—Italy, Spain, and the unexhausted, but surely not inexhaustible East, contribute the great majority of the specimens to the sixth annual exhibition of antique embroideries, which was opened last week in the Galleries of Messrs. Howell and James, Regent-street. Not a few of the examples belong to the sixteenth and seventeenth centuries, and are distinguished by beauty of design and colour and by cunning and curious workmanship. The white darned nets of Italy, and the white silk embroideries of Persia, constitute two of the most important series in the collection. It is unlikely that admirers of old needlework will often again have opportunities of enjoying such a noble display of choice things.

Specimens of various kinds of decorative art work from all parts of England, and even from Scotland and Ireland, have been sent in for competition at an exhibition organised by the Artists' Guild, Berkeley Gardens, Campden-hill, London. These include some beautiful art embroidery in silks, and wool, and linen. The prize for embroidery in silks given by the Princess Christian, who was to have opened the exhibition had she been in England, has been awarded to an Irish lady, Mrs. Nicholson, for a cushion worked in a large flower and foliage pattern on *Eau de Nil* coloured brocade. Another Irish lady wins the second prize. Some of the embroidery on linen in coloured flax threads is very beautiful. The tea-cloth, for which the first prize has been awarded, will be presented to the Princess Christian.

Rating of Machinery.—A meeting of members of Parliament interested in the Rating of Machinery Bill was held in the Conference room at the House of Commons on Wednesday afternoon. Sir W. Houldsworth presided, and amongst the members present were Messrs. Winterbotham, Illingworth, Mather, Hoyle, T. Sidebottom, Oldroyd, Mowbray, Knatchbull-Hugessen, Smith-Wright, and Sir B. Samuelson. There were also in attendance six or seven representatives of the Rating of Machinery Association, mostly manufacturers who are largely interested in the question. It was decided to appoint a joint committee of members of the House of Commons and manufacturers to watch the progress of the two bills now before the House. Mr. Knatchbull-Hugessen's Bill, which is practically identical with the original measure which Mr. Winterbotham carried through to a second reading last year, is down for a comparatively early Wednesday next year, but as the Deceased Wife's Sister Bill is before it on that day, the chances of discussion on that occasion are slight. Mr. Smith-Wright's Bill, which is entered as the Rating of Machinery Bill (No. 2), has a more favourable place on the following Wednesday, inasmuch as there is only a Scotch local Bill before it, which is not expected to occupy the whole sitting. The No. 2 Bill is a modified measure, embodying the Attorney-General's amendment which was accepted as a compromise last year. Both bills are in accord upon one point—that is, the omission of collieries from their operation.

According to a German contemporary, a new and cheap quality of satin gloves, intended to replace Swedish leather gloves, is causing some sensation in Chemnitz. At a short distance the imitation is a thorough success.

Flannel for Japan.—The secretary of the Belgian Legation at Yokohama, writing on the trade of last year, says:—"Italian cloth was imported to the value of 857,683 yen (1 yen equals 3s. 5½d.), a decline of 50 per cent. Next to muslin, Italian cloths are most in demand, and are supplied mainly by England. Germany, however, has sent some consignments, and Belgium succeeded in placing it to the value of 4,116 yen, which is by no means a bad commencement. Flannels have nearly doubled since 1888, having touched 1,029,985 yen in 1889. They are obtained mainly from Germany, small quantities coming from England and France. Belgium seems to have taken Switzerland's place, being represented with 3,031 yen. Flannel has, doubtless, a great future before it, as it is coming into fashion with the Japanese women

Textile Markets.

COTTON.

Manchester, Friday.

The demand recently made by the operatives in most of the spinning districts for an advance of 5 per cent. in wages has been duly considered by the employers of the two leading centres, Oldham and Bolton, and has been granted. On paper the position of spinners looks exceedingly well, but this has not yet been fully realised, and it is probable that it never will be. Both merchants and manufacturers are holding aloof so persistently that yarns are bound to give way, and that before any great length of time. It is still an unexplained marvel how spinners have succeeded in holding their own so well hitherto, but that it should continue much longer is looked upon as being amongst the impossibilities. In Bolton a little hitch has taken place in the wages negotiations, which threatens to result in considerable mischief. The operatives there asked for the advance to commence on the 19th inst. The employers conceded it to commence on January 1st—for many reasons a more suitable period. The time intervening between these dates covers only eight or nine working days, and the value of the concession made by the employers within that time would represent, roughly speaking, something like £2,000. The operatives, however, have refused to accept the concession as made by their employers, and threaten to strike until the 1st of January. In doing this they would sacrifice £40,000 in wages. Should this take place, it will afford a remarkable illustration of want of wisdom on the part of their leaders.

Cotton.—There has been another comparatively quiet week in the Liverpool market, with a continued drooping tendency in values of the raw material until Wednesday, when a sharp change took place in the tone, brought about probably by the action of operators, who had sold high grades for future and gradual delivery, buying to cover their engagements. As a result of the week's work, American, Brazilian, and Surats are nearly all reduced $\frac{1}{16}$d. Egyptian, though not nominally lower, has been rather easier to buy. Futures have as usual fluctuated to some extent, and the result on the week shews an advance of 1½ to 2½ points over those of a week ago.

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	95,765..	70,293..	52,530..	497,160..	4,474
Brazilian ..	3,980..	3,979..	3,260..	10,780..	—
Egyptian ..	8,270..	7,043..	3,350..	67,400..	249
W. Indian..	109..	1,063..	1,100..	15,910..	503
E. Indian ..	— ..	1,955..	3,560..	176,700..	2,103
Total..	108,133	84,343	63,790	776,950	7,329

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

	G.O.	L.M.	Mid.	G.M.	M.F.
American	4¾	4 15/16	5¼	5⅝	5¾*
			M.F.	Fair.	G.F.
Pernam			5 7/16	5 7/8	6¼
Ceara			—	5⅝	5 15/16
Paraiba			—	5⅝	6¼
Maranham			—	5 13/16	6¼
	Fair.	G.F.	F.G.	G.F.	Gd.
Egyptian	5 13/16	5 15/16	6	6¼	6 13/16
Ditto, white	6*	6¼*	—	—	
	Fr.	F.F.	G.F.	F.G.	Gd.	F.G.	Fine
M.G. Broach..	—	—	—	4¼	4 11/16	5
Dhollerah	3 7/16	3 9/16	3 11/16	3 13/16	4 1/16	4¼	4 11/16
Oomra	3¾*	3¾	4	4¼	4⅜	4 7/16	4⅞*
Bengal	—	—	3 7/16*	3 9/16*	3⅝*	4*	4 7/16*
Tinnivelly	4 1/16*	—	4¼	4½	4⅝	—	—

*Nominal.

Yarns.—There has continued to be a very slow market for yarns, manufacturers holding persistently aloof from buying wherever it has been possible to avoid it. Export yarns have also been slow, and amongst spinners there has been a little more inclination to accept offers previously declined. This remark applies to both sections of the market. In no department have sales been equal to production, or even nearly so. Some spinners are beginning to be bare of orders, and therefore shew much more disposition to effect sales, even at the cost of some reduction of their quotations. There is little need to discriminate, as the spirit of these remarks applies equally to all.

Cloth.—In cloth little business has been reported, though perhaps in the aggregate it may have risen somewhat above recent sales. Prices remain remarkably steady, it being impossible for manufacturers under the circumstances to make further reductions. Under the circumstances it is not wonderful that manufacturers have many looms unemployed. This is the case in Blackburn, Burnley, and most of the other principal centres of the weaving districts.

WOOLLENS AND WORSTEDS.

BRADFORD.

Business in wools is of a restricted character, and prices, though unchanged, are scarcely so firm as was the case a short time back. Mohair and alpaca are in small demand. Yarns, both for home and foreign account, are in slow demand. Piece goods are quiet. Merchants, owing to the approach of stock-taking, do not care to buy, and export trade is very dull.

HUDDERSFIELD.

At the close of the year matters are generally quiet, both with merchants and manufacturers, and buyers in the market are not numerous. This is the case at the present time, and the feeling is therefore one of dullness. Stocks are rather larger than could be wished, owing to the unseasonable character of the weather during the present and past year. Distributors had larger supplies than usual, so that the producing end had to suffer. Buyers, too, are holding off, owing to the drop in wool at the London sales, but manufacturers do not feel able to make any concessions. Spring goods repeats are only coming forward slowly, and winter stuff is only being ordered in a half-hearted sort of fashion. As was anticipated in *The Textile Mercury* some time ago the operation of the new American tariff has resulted in an over-crowding of the home market with worsteds. The Colonial trade is fair.

ROCHDALE.

The flannel trade has been fairly active during the past fortnight, merchants having been able to reduce their stocks, thanks to the spell of cold weather. There has been, if anything, a slight falling off, however, during the past few days, the demand being of a hand to mouth description.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 2nd Dec., say:—

Wool.—There is no new feature in the condition of the Wool Market this week. There has been little enquiry, and transactions have been of a retail character. Prices are nominally the same, but there is barely sufficient doing to test values.

Sheep Skins.—The supply has been fully an average, and mostly of prime sorts, both hog and prime crossed wethers being more plentiful. Competition continues strong at firm prices.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, 3rd Dec., 1890.

The market here is without notable change. Jute is rather stiffer, and Calcutta wires to-day "Small arrivals; no sellers at recent quotations." American advices are less favourable, and the close of the year approaches making all buyers less disposed to operate in new contracts. On the spot jute sells at steady prices, and during the past ten days quite 50,000 bales have been done.

Flax is not in active demand. Spinners are still shy at making bids for Spring shipment. Riga K continues to be offered at £18 10s. to £19. Brown Petersburg is slightly easier.

Jute yarns are without change. The lower kinds so frequently quoted do not, however, indicate the real state of this market. The largest firms do not make common 8 lb. Cops quoted to-day at say 1s. 2d. to 1s. 2¼d. For prime warp yarns very full prices are paid, and export houses are buyers even at a slight advance.

Heavy yarns, say one lea, are also fairly active, and a good business is passing.

Linen yarns are quiet, and for common tow wefts the market is decidedly weaker. Hessians are steady, without any marked change.

Linen goods are in fair demand, and an excellent business is passing from day to day at list prices. Never were linen goods more beautiful. The excellent flax of the past two seasons shews in every type of fine linen goods. As a lucky year makes a vintage of superior quality, so with flax. People who use linen goods should buy their flax sheetings and table cloths now. They never were better in quality, and never were offered better value.

Brechin, Forfar, and Fife are all well engaged, and while prices are not quoted higher, the list rates are firmly adhered to.

Arbroath is also active in all departments, especially in the heavier and commoner makes of flax and tow goods.

The Dundee jute fancy trade continues brisk. The best makers are full of orders, and twines, cords, and ropes are all in excellent demand.

MANCHESTER.

There is not much doing in the linen trade here, merchants being undesirous of operating in view of the approaching stock-taking. Roughs and other goods of that class have been slow of sale, although prices are very low. Yarns maintain their firmness, so that manufacturers do not see their way to respond to the solicitations of buyers, who press for concessions in certain grades. The fancy section of the trade has been fairly brisk.

SILK.

LONDON.

Messrs. Durant and Co., in their circular dated the 3rd inst., say:—

The past month has been dull and disappointing to all engaged in the silk trade, for although shipments from Shanghai and Japan to Europe are about 20,000 bales less than at the same period of last year, all demand seems to flag. To a great extent this want of confidence may be attributed to the financial depression which so gradually crept upon us, culminating last month in a sharp financial panic; it was therefore hardly to be expected that we should at once see a return of business. Prices of Chinas and Canton shew only a small reduction, but in Italians and Japans it has been heavy. Our deliveries are poor, but arrivals being small the stock is but slightly increased, and that only in Canton silk.

Arrivals in November.

Bengal	49	bales.
China	799	,,
Japan	11	,,
Canton	849	,,
Tussah	2	,,

HOSIERY AND LACE.

NOTTINGHAM.

Low yarns are not being bought freely. Woollen yarns for the hosiery trade are, however, in fair request. The lace industry as a whole is not in a satisfactory condition. The finishing departments are somewhat brisker, but a large proportion of the goods dealt with are made in Scotland, so that the fact must not be taken as a fair index to the position of manufacturers here.

LEICESTER.

In wools, although values are unchanged, there is not much doing, buying all round having been kept to the lowest possible limits. The decline in rates is not so great since the financial crisis commenced as was feared. With the turn of stock-taking and the new year greater confidence may be reckoned on, and some large buying operations must follow. Holders both of English and colonial wool are more disposed to keep their stocks rather than needlessly sacrifice on them. The yarn market is quiet, but machinery is still fairly engaged all round. The past week brought numerous repeat orders in both plain and fancy hosiery. A return of frost would prove beneficial to the trade.

DRY GOODS.

MANCHESTER.

The heavy departments have continued to experience the beneficial effects of the cold weather that set in recently, and although the unexpected advent of milder temperature for a short time on Monday was disappointing, matters have now again resumed their normal condition. Buyers in the warehouses are not giving out many orders to manufacturers just now, partly owing to the proximity of stock-taking, and partly on account of the mistaken notion prevalent amongst many of them that by holding off they will be able to place contracts for spring goods at prices less than those now current. Manufacturers, on the other hand, continue to repeat that the rates they are getting do not compensate for the increased cost of production that has taken place since the advance in wool some time ago. In illustration of this it may be pointed out that on certain French dress goods manufacturers are only receiving 10 per cent. higher prices than those current in 1886, while the cost of wool since that date has advanced 25 per cent. Goods for evening wear have moved off rather more freely of late. Of trade generally, it may be said that between now and Christmas the retail section will be chiefly employed in wholesale business, only anticipating a few repeats.

THE KIDDERMINSTER CARPET TRADE.

Manufacturers in the Brussels department of this industry are busier than they were a month ago, but the amount of business on hand is still below the standard for this time of the year. The position of the trade is, however, deemed satisfactory; indeed, considering the various adverse circumstances which have been constantly cropping up ever since the autumn campaign was entered upon, manufacturers have cause to congratulate themselves that things are no worse. Of course, the question of price has been the great block to the free development of the season's business. Buyers have been naturally holding off as far as ever possible in the belief that with a declining wool market there would be a reversion to the old list, and the result is that manufacturers have only booked about half the number or weight of goods they usually do. Up to the present there is not the slightest evidence of any giving way on the part of the manufacturers, nor is there the faintest likelihood of such taking place, as the association which regulates the prices at which the different grades of cloth shall be sold now consists of almost every maker of Brussels in the kingdom, and there is the strongest determination that the advance prices must be adhered to, come what may. The turn of the year is hopefully looked forward to, and prospects for the opening months of the new year are considered exceedingly favourable.

Manufacturers of Royal Axminsters still find plenty of employment for their looms, and this branch of the trade is in a most satisfactory condition.

For Wiltons, and, in fact, all heavy goods adapted for winter wear, there is quite an average demand, and in the rug trade machinery is fully employed

In the local wool market, although transactions are continually taking place, business is below what it should be. Operations are strictly confined to consumptive requirements, and thus spinners' stocks are kept low. For some sorts prices remain stationary, but for others there is a gradual giving way. An improvement in this market is anxiously awaited, but it is felt that until the political atmosphere becomes clearer and money becomes cheaper no great alteration can be looked forward for.

Tariff News.

NEW CUSTOMS TARIFF OF CANADA.

(*Concluded from page 383.*)

The following is a statement of the rates of import duty on textiles now levied under the new Customs tariff of Canada.

ARTICLES.	DUTIES LEVIED. Dols.Cts.
India-rubber clothing, or clothing made waterproof with india-rubber not elsewhere specified	35 p.c. *ad val.*
Rubber belting, hose, packing, mats and matting, and cotton or linen hose lined with rubber	Lb. 0·05 and 15 p.c. *ad val.*
Belting of leather or other material not elsewhere specified	25 p.c. *ad val.*
Card clothing	25 p.c. *ad val.*
Asbestos, in any form other than crude, and all manufactures thereof	25 p.c. *ad val.*

The following articles are exempt from Custom Duties:—

Wool and the hair of the alpaca goat and of other like animals, not further prepared than washed, not elsewhere specified.

Noils, being the short wool which falls from the combs in worsted factories.

Coir and coir yarn.

Cotton waste and cotton wool.

Rags of cotton, linen, jute, hemp, and woollen paper waste or clippings, and waste of any kind except mineral waste.

Silk, raw or as reeled from the cocoon, not being doubled, twisted, or advanced in manufacture in any way; silk cocoons and silk waste.

Bolting cloths not made up.

Aniline dyes and coal-tar dyes, in bulk or in packages of not less than 1 lb. in weight, including alizarine and artificial alizarine.

Aniline oil, crude.

Aniline salts and arseniate of aniline.

Berries for dyeing or used for composing dyes.

Cochineal.

Dyeing or tannin articles, in a crude state, used in dyeing or tanning, not elsewhere specified.

Buckram for the manufacture of hat and bonnet shapes.

Blanketing and lapping, and discs or mills for engraving copper rollers, when imported by cotton manufacturers, calico printers, and wall-paper manufacturers, for use in their own factories only.

Cotton yarns not coarser than No. 40, unbleached, bleached or dyed, for use in covering electric wires; also for the manufacture of cotton loom harness; and for the use in the manufacture of Italian cloths, cotton, worsted, or silk fabrics.

Cotton yarns in cops only, made from single cotton yarns finer than No. 40, when for use in their own factories by the manufacturers of Italian cloths, cashmeres, and cotton cloths for the selvage of the said cloths, and for these purposes only.

Jute yarn, plain, dyed or coloured, when imported by manufacturers of carpets, rugs, and mats, of jute webbing or jute cloth for use in their own factories.

Jute cloth, as taken from the loom, neither pressed, mangled, calendered, nor in any way finished, and not less than 40 ins. wide, when imported by manufacturers of jute bags for use in their own factories.

Yarns, made of wool or worsted, when genapped, dyed, and finished, and imported by manufacturers of braids, cords, tassels, and fringes, to be used in the manufacture of such articles only in their own factories.

Canvas of not less than 45 ins. in width, not pressed or calendered, for the manufacture of floor oil-cloth.

Canvas, jute canvas, not less than 58 ins. wide, when imported by manufacturers of floor oil-cloth for use in their factories.

Duck, for belting and hose when imported by manufacturers of rubber goods for use in their factories.

Felt, adhesive, for sheathing vessels.

Fibre, vegetable, for manufacturing purposes.

Fillets of cotton and rubber, not exceeding 7 ins. wide, when imported by and for the use of manufacturers of card clothing.

The following articles have been added to the free list under authority of Orders in Council:—

Lastings, mohair cloth, or other manufactures of cloth when imported by manufacturers of buttons for use in their own factories, and woven or made in patterns of such size, shape, or form, or cut in such manner as to be fit for covering buttons exclusively; these conditions to be ascertained by special examination by the proper officer of Customs, and so certified on the face of each entry.

Yarn spun from the hair of the alpaca or Angora goat, when imported by manufacturers of braids for use exclusively in their factories in the manufacture of such braids only, under such regulations as may be adopted by the Minister of Customs.

Square reeds and raw-hide centres, textile leather or rubber heads, thumbs and tips, and steel, iron, and nickel caps for whip ends, when imported by whip manufacturers, for use in the manufacture of whips in their own factories.

Copper rollers for use in calico printing, when imported by calico printers for use in their factories in the printing of calicoes and for no other purpose (such rollers not being manufactured in Canada).

Hatters' bands, bindings, tips and sides, linings, both tips and sides, when imported by hat and cap manufacturers only for use in their factories in the manufacture of hats and caps, shall be and the same are hereby placed upon the list of articles that may be admitted into Canada free of Customs duties.

Gazette News.

ADJUDICATIONS.

Edgar W. Waugh, Duke's Mansion, Grosvenor-square, London, carpet manufacturer.

Mary Mason, Shaw Mill, Mixenden, near Halifax, widow, worsted spinner.

NOTICES OF DIVIDENDS.

C. Roberts, Tarleton House, Burnley, and J. P. Staniar, The Limes, Alderley Edge, trading as Roberts and Staniar, 34, Princess-street, Manchester, merchants; 7¼d., second and final.

PARTNERSHIPS DISSOLVED.

John Harrison, Richard Griffin, Richard Hambly, Percy Woodhouse, and Thomas E. Walton, Manchester, manufacturers, warehousemen, and merchants; Richard Griffin retiring.

Joshua Schofield and Sons, Commercial Mills, Cornbrook, near Manchester, dyers, finishers, etc.

T. Birkbeck and Co., Cannon Mill, Great Horton, Bradford, worsted manufacturers.

Broadhurst and Company, Market-street, Manchester, India-rubber manufacturers; by death of John Swindells.

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.

24TH TO 29TH NOVEMBER.

19,011. J. INGHAM and J. INGHAM, 71, Ashgrove, Bradford. Shuttles.

19,019. F. W. GELDER, 8, Quality Court, London. Apparatus for indicating the tension upon the warps of looms.

19,023. J. IRELAND, 41, Reform-street, Dundee. Cop and pirn shuttles.

19,065. S. PITT, 24, Southampton Buildings, London. Sulphonated thionines, and dye-stuffs therefrom. (*L. Cassella and Co.*, Germany).

19,100. G. E. N. I. E. SUBRA, 11, Wellington-street, Strand, London. Decorticating ramie and other textile plants.

19,101. J. W. NEWALL, United University Club, Pall Mall, London. Transmitting motion from one spindle to another at varying angles.

19,158. P. J. GRANDSIRE, fils, 55, Chancery-lane, London. Machines for dyeing skeins or hanks.

19,167. J. Y. JOHNSON, 47, Lincoln's-Inn-Fields, London. Sulpho-acids of a red basic naphthalene dye-stuff. (*Badische and Soda Fabrik*, Germany).

19,206. T. WRIGLEY, Manchester. Spindles and bobbins for ring and traveller spinning and doubling frames.

19,222. R. TAYLOR, Junior, 17, St. Ann's-square, Manchester. Exhaust opening machines for cleaning cotton, etc.

19,225. J. PICKSTONE and H. MANN, 54, Water-street, Radcliffe. Warp dressing frames.

19,256. W. HARKER, and T. E. HODSON, 46, Lincoln's-Inn-Fields, London. "Swells" employed in looms.

19,263. L. WOODWARD and A. LEE, 24, Southampton Buildings, London. Knitted goods and machinery therefor.

19,283. I. L. BERRIDGE and G. BLUNT, 323, High Holborn, London. Apparatus for trimming or finishing stockings, and other knitted or woven articles.

19,298. A. J. BOULT, 323, High Holborn, London. Straight bar knitting frames. (*F. Baltensperger*, France).

19,303. R. WILLIAMS, 64, Barton Arcade, Manchester. Ornamentation and protection of the selvages of pile and other fabrics.*

19,307. E. COLDWELL, 47, West Parade, Huddersfield. Nap raising machinery.

19,330. S. PITT, 24, Southampton Buildings, London. Preparation of colouring matters with gamma-amido-naphthtolsulphonic acid. (*L. Cassella and Co.*, Germany).

19,359. W. TATTERSALL, 20, Charles-street, Bradford. Machinery for washing wool, etc.

19,360. W. TATTERSALL, 20, Charles-street, Bradford. Machinery for drying wool, etc.

19,362. W. TATTERSALL, 20, Charles-street, Bradford. Machinery for drying wool, etc.

19,367. J. HAWORTH, Church Hall, Church. Machinery for washing textile fabrics.*

19,374. T. PILKINGTON, and P. BOARDMAN, 8, Quality Court, London. Mules for spinning.

19,391. F. SUTCLIFFE, 3, Heaton-grove, Bradford. Reels for reeling cotton, etc., to prevent short lengths in reeling, according to the Merchandise Acts.

19,460. J. O. O'BRIEN, 6, Bank-street, Manchester. Ring spinning frames. (*F. J. Grun*, France.)

SPECIFICATIONS PUBLISHED.

1889.

19,519. DOBSON and BROMILEY. Flat carding engines. 8d.

1890.

75. COOPER and others. Knitting machinery. 8d.

134. FRISWELL and GREEN. Azo-colouring matters. 4d.

200. WALKER and BROWN. Drying fabrics. 6d.

262. BUTTERWORTH, J. and J. S. Tentering, etc., machines. 6d.

437. HATTERSLEY and HILL. Looms. 8d.

823. BARLOW (*Scott*). Ring-spinning, etc., machines.

2,195. BRAITHWAITE. Indigo dyeing. 6d.

SECOND EDITION.

1889.

9,642. IMRAY. (*Farbwerke vorm. Meister Lucius and Bruning*). Oxysulphonic acids of naphthalin. 6d.

AMENDED SPECIFICATION.

3,724.* WIRTH. (*Farbfabrick vorm. Bronner*) Colouring matters. 6d.

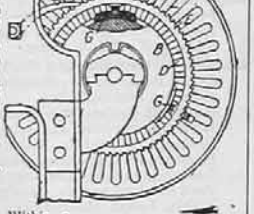
ABSTRACTS OF SPECIFICATIONS.

10,588. July 1, 1889. **Knitting.** H. QUINQUARLET-MERDINGER, V. QUINQUARLET, and A. VALTON, all of Rue de la Paix, Troyes, Aube, France.

Straight-bar machines.—For widening to the extent of two needles, without leaving any holes in the fabric, at one movement of the machine in the manufacture of pants, ladies' combinations, sleeves, etc., the filling-up box is composed of two parts, one of which is fixed on the ordinary narrowing rod, and the other slides upon pins upon the former. The former part carries two filling-up or widening points and two transferring points, and the latter carries only six transferring points. In the first period of the operation, the transferring points shift the loops on eight needles to the extent of two needles, and one filling-up point shifts the loop of the needle, *i.e.*, the loop of the second or last row but one of the knitting. In the second period the second-mentioned part of the filling-up box is moved away from the other part to a distance equal to that between two consecutive needles, during which movement the filling-up points shift the lower loops to adjacent needles. There is now a loop to every needle, and consequently no holes are left in the fabric. 8½d.

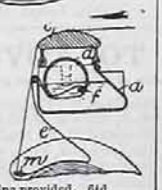
10,596. July 1, 1889 **Looms.** R. SCOTT, Craigmount, Taypors, Fife, N.B.

Let-off mechanism.—A ring D, provided with frictional pads G, which bear on a pulley or other suitable part B on the loom warp beam, and are adjustable by screws, is formed with teeth E engaged by a pawl L on the framework, or with worm wheel or spur teeth gearing with a worm or pinion. On lifting the pawl the warps may be taken back. 6½d.



10,600. July 1, 1889. **Looms.** J. LORD, Dawson Weir, Todmorden.

Warp damping. — Within a water trough *c*, beneath the warp bearer *e*, is pivoted a perforated roller *d*. A piece of cloth *e* is wrapped around the roller or connected to a rod *f* within it, and its end rests upon and imparts moisture by capillarity to the warp. In some cases a rod *m*, attached to the end, is hooked to the warp, as shewn. The roller may be turned by hand when it is required to raise the cloth from the warp, arrangements for locking it in the required position being provided. 6½d.



10,635. July 1, 1889. **Printing or Dyeing.** J. V. HELME, 33, Shepley-street, Longsight, Manchester, and J. A. WALTON, 9, Mincing-lane, London.

Cloth is printed with a soluble solution of indigo, which is fixed by the action of air and water. The solution is prepared by dissolving zinc in caustic soda previously added to a mixture of indigo and water. The solution is rendered pasty by means of gum water and soda solution. The cloth, after printing, is led through water tanks, and during its passage between the tanks is exposed to the air. When it is required to cover the whole of the surfaces the cloth may be passed through a vat containing a weaker indigo solution. The Provisional Specification states also that a solution of zinc in bisulphite of soda is used in making the indigo solution. 4½d.

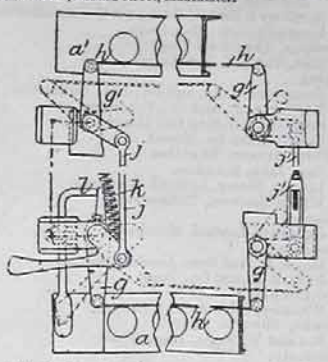
10,725. July 3, 1889. **Engine packing.** G. PLATT, Dunham Place, Ashton-under-Lyne.

Relates to the manufacture of asbestos and like packing for steam engines, pumps, and other purposes: and consists in employing, in substitution for the plain threads or strands usually plaited or braided round the asbestos, tubular woven or braided banding, such for example as is used for driving the spindles of spinning and doubling machines. Such tubular banding may either be braided hollow, or round a core of fibrous material, or a wire of lead, copper, or other metal. 4½d.

10,737. July 3, 1889. **Weavers' combs.** T. NUTTALL, Ramsbottom, Lancashire.

Metal combs are made with a stronger tooth at each end. 6½d. *Drawings.*

10,742. July 3, 1889. **Spinning.** J. M. HEYBERINGTON, Vulcan Works, Pollard-street, Manchester.



Anti-ballooning.—Several arrangements of anti-ballooning wires are described, in which the wires on the two sides of the frame are connected together and tightened or slackened simultaneously, and in which the wires are moved out of the way simultaneously and automatically on the rising of the ring rail. The figure is a plan of one arrangement. The two wires *h* are connected together by bell crank levers *g*, *g1* and rods *j*, *j1*, one of which is adjustable, and during the winding on the lower parts of the bobbins are locked in their working position against the force of a spring *k*, by means of a catch lever *l*, which is released at the proper time by the rising of the ring rail. Spur wheels and shafts may be used for connecting the two wires *a*, *a1*, and the latter may be raised or moved gradually out of the way by the rising of the ring rail The wires on each side of the frame may, if desired, be provided with independent tension arrangements. 8½d.

10,781. July 4, 1890. **Spinning.** R. CURTIS and J. WAIN, Phœnix Works, Manchester.

Mules and Twiners.—Means are described for automatically operating, at the proper times, the drawing-out catch-box, the front roller catch-box, and the taking-in friction gear. 8½d. *Drawings.*

10,815. July 4, 1889. **Looms.** M. TAYLOR, 7, Vale-street, Darwen.

Loose Reed Motions.—A long flat metal spring *a* (Fig. 3) with regulating screws adjusts the position or curve of the reed along its entire length. The stop-rod B and reed-case C are in one piece, which is mounted in end bearings and formed with bearings or necks resting in intermediate brackets *c*. The duck-bills *d* are fastened to arms *s*. In place of the usual heaters shafts *f* are provided, mounted on fixed brackets *g*, and carrying tubes *h* against which the duck-bills work. An arm D pivoted to the lay A rests on the duck-bill, and when the latter rises a finger *s* acts on the usual projection *j* of the spring handle E to stop the loom.

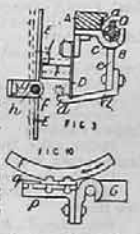


FIG 3

FIG 10

Shuttle boxes and races.—The back edge of the "fly plate" is bevelled off to form a channel from which the accumulated dirt passes off through grooves in the "back board."

Stopping and Starting Mechanism (non-automatic).—For raising the brake-lever after the loom has been stopped a second handle is employed, forming the vertical arm of an L lever, the horizontal arm of which carries the usual inclined block acted on by the bracket on the spring handle, and is connected with the brake lever. The brake-block consists of a trough-shaped casting *p* (Fig. 10) across which are stretched leather strips *q*, which act on the brake wheel F. In some cases the block may be arranged to slide a short distance on its lever G by contact with the wheel F, and thus to pull into action a sliding block with which it is connected; a spring may return the blocks to their normal position. The brake lever boss is cut away to allow of its being placed close to the brake wheel. The axle or bearing of the belt fork works on centre points as upper and lower bearings, the lower having a screw adjustment, whilst the upper is reversible.

Checking Shuttets and Pickers.—The check straps are connected to a horizontal slide rod carrying a spring which serves as a cushion.

Picking Strap Substitute.—Two or more links or elongated wire loops connected by short helical coils of wire serve as a picking band.

Let-off Mechanism.—The provisional specification states that the weight levers for imparting friction to the beam are formed with eyelets to receive levers or bars for use when the weights, etc., are to be lifted, or when more weighting is required. 8½d.

10,964. July 5, 1889. **Looms.** B. SMITH, 16, Oxford-street, G. W. SMITH, Primrose Hill, and T. ROWLING, Ferncliffe, all of Bingley, Yorkshire.

The bottom heald levers are formed with slots to admit of easily removing them from the shafts, and with projections which catch against a rod in the event of the breakage of a heald cord. 6½d. *Drawings.*

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

Auctioneers:
Rushton, Edward, and Son, Blackburn, and Manchester.
Salisbury & Hamer, Blackburn and Manchester.
Unsworth, Geo., Manchester.

Bandings, Tape and Tubular:
Hart, Thomas, Blackburn.

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

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

Boilers:
Galloways, Limited, Manchester.

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

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

Cement, Mineral Fusible:
Fox and Williams, Manchester.

Chemicals:
Grimshaw Bros, Clayton, Manchester.

Cop-Tubes:
Jagger & Co., Oldham.

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

Cotton Driving Ropes:
Hart, Thomas, Blackburn.
Mellor, John, Manchester.

Cotton Waste, Engine Waste, &c.:
Mellor, John, Manchester.

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

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

Driving Ropes, Bandings, &c.:
Hart, Thomas, Blackburn.
Mellor, John, Manchester.

Drying Machinery:
Whiteley, Wm. & Sons, Huddersfield.

Dust Fuel Furnace:
Donkin, B. and Co., London.

Emery Filleting:
Dronsfield Brothers, Oldham.

Engines:
Arnfield, J. & E., New Mills, Stockport.
Goodfellow, Ben., Hyde.
Musgrave and Sons, Ltd., Bolton.

Engine Packing:
Mellor, John, Manchester.

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

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

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

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

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

Indicators:
Orme, G., and Co., Oldham.

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

Knitting Machinery:
Harrison, W., Manchester.
Rothwell, W. & Co., Limited, Bolton.

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

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

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

Machinery (Bleaching, Dyeing, Printing, &c.):
Arnfield, J. & E., New Mills, Stockport.
Dickinson, Wm., & Sons, Blackburn.
Heppenstall, E., Huddersfield.
Riley, J. H., and Co., Bury.
Whiteley, Wm. & Sons, Huddersfield.

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

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

Machinery (Woollen and Worsted):
Curtis, Sons, and Co., Manchester.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hetherington, John, and Sons, Manchester.
Holden, G. H. and Co., Manchester.
Horrocks, Jno., and Son, Manchester.
Lees, Asa, and Co., Limited, Oldham.
Platt Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield.
Tatham, John, and Sons, Limited, Rochdale.
Taylor, Lang and Co., Stalybridge.

Oil:
Wells, M. & Co., Manchester.

Oil Cans and Oilers:
Jagger & Co., Oldham.
Royle, W., Atherton.

Patent Agents:
Bosshardt, F. & Co., Manchester, Oldham, and Stockport.
Thompson, W. P., & Co., Manchester, Liverpool and London.

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

Picker Steepers:
Green, James, Blackburn.

Pistons:
Lancaster and Tonge, Pendleton.

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

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

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

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

Steam Traps:
Lancaster and Tonge, Pendleton.

Tambouring Threads, Braids, &c.
Makinson, E. and W. G., Preston.

Technological Handbooks:
Bell, George, and Sons, London.
Naismith, J., Manchester.

Temples, etc.:
Blezard, James, and Sons, Padiham.
Lupton Brothers, Accrington.

Tools (Machine):
Hetherington, John, and Sons, Manchester.

Twines, Ropes:
Mellor, John, Manchester.

Type Writers:
Type Writer Co., Ltd., London and Manchester.

Ventilation:
Blackman Ventilating Co., London.
Matthews and Yates, Manchester.
Renshaw and Co., Manchester.
Rothwell, John, Farnworth.

Warping Machinery (Sectional):
Bethel, J., Manchester.
Livesey, Henry, Limited, Blackburn.

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

Wire Healds:
Barlow, H. B., and Co., Cornbrook, Manchester

Yarn Assorting Balance:
Thomas, G. and Co., Manchester.

Yarns, Coloured:
Makinson, E. and W. G., Preston.

Yarn Testing, &c., Machine:
Wallwork, Henry, and Co., Manchester

INDEX TO ADVERTISERS' NAMES.

When the number of the page is not given the Advertisement does not appear this week.