

The Textile Mercury:

A Representative Weekly Journal for

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

In all Branches of the Textile Industries.

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The Textile Mercury.

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to whom subscriptions from readers in the United States and Canada may be forwarded.

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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 suitable 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 office, 23, Strutt Street, Manchester, early in the week in order to receive attention in the next issue.

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Current Topics.

THE UNIFORM WEAVING LIST.

Agreement on this subject, though slow, is being gradually approached. A meeting between representatives of the employers' and operatives' association to further discuss the subject was held at the White Bull Hotel, Blackburn, on Saturday. Messrs. W. Taylor (Blackburn), Wilding (Preston), Thornber (Burnley), and Rawlinson (secretary) represented the employers, while the operatives were represented by Messrs. Birtwistle (Accrington), Barker (Blackburn), and Mr. Wilkinson. Mr. Park, of Preston, was also present. The meeting lasted a considerable time. Ultimately conditions which both operatives and employers pledged themselves to recommend to their respective associations were agreed to. Afterwards a meeting of the operatives of the Northern Counties Weavers' Association was held at the Weavers' Office, Blackburn, to discuss the recommendations, and after three hours discussion the subject was adjourned till today, when a meeting will be held at Bury. From the above it will be seen that a basis of practical agreement has been arrived at, and as the representatives of both sides are now in accord upon every point, their constituents cannot do better than ratify what has been done, so that once for all this subject may be got out of the way, and the trade all round be liberated from the shackles by which it has been fettered. It is quite absurd for the operatives to keep sending powerless delegates to conferences with their employers. They must be furnished with plenary powers in order to conclude a matter that has been in suspense already far too long.

TARIFF PREACHING AND TARIFF PRACTICE IN FRANCE.

There is a wonderful difference between the practice of our Continental neighbours, as shewn in their tariff legislation, and their preaching in regard to the famous Bill fathered by Major McKinley. If they could have their way, the rest of the world would simply act for the benefit of the two most inconsistent of tariff sinners—France and Germany. This would be, in fact, a modern application of the ancient principle of "Heads I win, tails you lose." Both France and its neighbour *de l'autre Rhin* appear strongly steeped with the doctrine of protection; but when the United States also shews its belief in a similar policy by imposing very heavy duties on French and German goods, Barmen, Crefeld, Chemnitz, Elbeuf, Roubaix, St. Etienne, and a host of other manufacturing towns are up in arms and prolific in protests. The Paris *Liberté* joins in the outcry against the McKinley Bill. The

paper says: "From the United States Government it is useless to expect any result from ordinary diplomatic negotiations. The only way is to cut short their explanation; determined reprisals alone are likely to overcome their ill-will. Let us apply the clauses of the McKinley Bill to American goods upon their entrance into France." The *Republique Française* and a host of other French journals have also protested against the measure, and some persons talk of a European Customs Union for the purpose of excluding the great American hog and other products of the States. And yet M. Lockroy's voice is as that of one crying in the wilderness, when he warns France that a tariff war would utterly ruin her trade. She is not the better, he says, but much the worse for her tariff war with Italy, and her exclusion of Greek agricultural products. The very policy which, practised by others, sets Frenchmen by the ears, is one which they themselves follow most assiduously. The States are simply "doing others" as "others do them." But France will not accept the principle involved in the saying, "Do others as they do you." She will not be "done," although ready enough to "do" others. Her domestic legislation of late has been deeply marked with the stamp of Protection, no regard whatever being paid to the claims of others abroad. She has rejected the Commercial Treaty with Greece, and has raised the duties on the Turkish currants, which enter so largely into the composition of those artificial decoctions known as modern French wines. All this and more France has done, and yet, forsooth, America must not treat her in a similar manner. When will these foreign dullards see the inconsistency of their attitude?

"FUTURES" IN YARN AND CLOTH.

Dealing in futures in cotton, whether for good or evil on the whole to the trade, has become a firmly-established institution, which hardly anybody expects will ever be disestablished in their time. Undoubtedly, the practice has its advantages as well as disadvantages, and it would be well, perhaps, for those who are thoroughly well versed in its development, working capabilities, and its advantages or disadvantages, to give their views upon it, in order that the trade may have a basis upon which to consider whether it would be wise or otherwise to extend the practice to the yarn and cloth branches of the cotton trade. A tendency in that direction is beginning to shew itself, but it may be a mere drift movement. If good, it ought to be under intelligent direction, and have settled rules and regulations by which transactions should be governed. If bad, it ought to be arrested immediately, as when once it gets under way it may be difficult to stop. In our own opinion, the existence of a system of dealing in futures in cotton, involves and renders necessary the establishment of the

practice in relation to yarns and cloth, if the trade, in the last-named important divisions, has to be conducted with any degree of comfort to the lives, or safety to the interests of those engaged in it. In view of the inflation of present prices, spot transactions are once again reduced to very small dimensions, and if business has not to be totally suspended, it seems that a bridge must be thrown over the current and the next month or two, so as to provide facilities that will allow futures to be dealt in. Already we hear that such a method of getting over the difficulty is being resorted to, and that sales for forward delivery at lower than current rates are taking place in the yarn market. As an instance, it may be mentioned that an Oldham paper has reported a sale of 600 skips, 36's T. of good quality, at 8½d. per lb., less 4 per cent. discount and commission, delivery November-December-January, by a company. This will represent about 180,000 lb. We commend the consideration of this important subject to the leaders of the trade.

AFRICA LOST AND FOUND.

The past few weeks will probably form a red letter period in the world's future history. Africa has been lost and is found, and the finders have proceeded to divide the treasure amongst themselves without quarrelling and bloodshed—a fact upon which mankind is to be congratulated. Unquestionably Africa was well known to its innermost recesses in those ancient times when its Mediterranean and Red Sea shores were the seats of powerful empires that have long since passed away. The internecine strife which characterises the decay of political institutions, and which was experienced almost all along the regions we have indicated, effectually isolated the interior from intercourse with the relatively civilised trans-Mediterranean lands, whilst the uprising of the Mohammedan power, which swept like a tornado over these regions, rendered them, so far as intercourse with the interior went, to all other races than the Arabs, an impassable desert. Their burning of the Alexandrian Library, an event that occurred long before the invention of printing, obliterated all the sources of information from which coming generations might have obtained some light upon the subject of the African interior. The barbarism to which they reduced the countries referred to has been well maintained up to the present century. Had it not been that the discoveries of Columbus revealed the new world to Europe, the mystery of the Dark Continent would long ago have been made clear. As it was, the two Americas, peopled with less warlike races than the Arabs, offered more tempting objects for annexation and wider scope for Spanish ambition than the comparatively infertile lands of Africa, with their sandy deserts and rare though fruitful oases, which were all that were then known. But the world has now need of it, and Africa is found. Its vast territories are now being peacefully allocated to the European powers as spheres of influence in which, unmolested by one another, they may exercise their best powers—let us hope they will use their worst as little as possible—to sweep away the cruel barbarism with its slavery and cannibalism that has for centuries reigned supreme and unmolested. It is to be hoped also that a happier fate for the native races will be the outcome of their efforts than has been that of the native races of the American Continent. Properly dealt with, the material at hand will be found excellent for the construction of new kingdoms and empires of just such a character

as will be most advantageous to the interests of European peoples, forming excellent outlets for the manufactured products of civilisation, and giving abundance of raw material in return. If Europe enters Africa only to make its influence felt as a blight and a curse, it may be sure that the effect will react upon itself, and the experience of Spain, and its connection with the new world will be repeated. This is an example to be avoided. We therefore regard with pleasure the decision of the powers to prevent the admission of those twin curses of uncivilised races, alcoholic liquors and gunpowder, as highly satisfactory, and an augury that wiser influences will prevail than those which governed European contact with the new world.

MR. JOHN BURNS AND HIGH WAGES.

Mr. John Burns, of London, who has achieved notoriety if not fame as a champion in the labour crusade of the metropolis, has evidently had his services requisitioned in the provinces. On Saturday last, speaking at a labour demonstration at Hartlepool, he is reported to have said that England had no reason to fear foreign competition. "Even with 70 to 80 per cent. higher wages the English could still beat the foreign workers. He advised English working men, therefore, to resent the attempt about to be made to lower wages, especially as prices did not warrant any reduction." Whatever may be the case at Hartlepool amongst those persons he was directly addressing we do not know, but over the wider field to which his remarks apply it is quite certain that his statements are absolutely untrue, and that in making them he was speaking of things he knows nothing of. An advance of wages in the leading textile industries of much less than the figure Mr. Burns speaks of would transform the narrow margins of profit at present existing into serious losses, ruin them, and transfer the industries to other countries. And we have no doubt but the same results would arise in many others if such a movement had to take place. It is clear from his remarks that Mr. John Burns lacks discrimination, and speaks with a delightful sense of irresponsibility. Facts to him, as to others of his profession, are troublesome things, and he does not like to make their acquaintance; hence he deals out as substitutes statements that bear the mint brand of his imagination. It will be a great pity if the working men of the country place their trust in such leaders; only one result can spring from it—disappointment and disaster. A quarter of an hour's serious thought upon the matter would induce them to revoke their confidence.

FINER COUNTS IN OLDHAM, AND WHAT THEY ARE INDICATIVE OF.

A review of the spinning industry will shew that the counts spun have been gradually going finer and finer. At one time Oldham was noted for its coarse yarns, and subsequently for its medium numbers; 32's at one period was its great staple product. But the ground has had to be shifted in order to meet the demand of manufacturers; 34's have taken the place of 32's, and firms, to keep themselves in touch with the altered circumstances, of the market have been compelled to go even finer. Indeed, nearly all the mills built of late years have gone in for spinning fine numbers, say from 50's to 70's. And now it is reported that a portion of the machinery at a mill in course of erection at Oldham is to be devoted to spinning Egyptian yarns. Oldhamers are not all conservative in these matters; they go in for what pays best,

and this is the reason why some firms have gone on to spinning finer numbers. Well, it is all the better for those who keep to the medium yarns. A study of textile fabrics in nearly all departments will prove conclusively that with the march of education the masses have demanded better and finer qualities of wearing apparel. And no more striking illustration of the change which has been and is going forward can be found than in the improved position of the working classes compared with 20 or 30 years ago. To-day the operative dresses as well if not better than his employer did 30 or 40 years ago. Nay, more; some even now eclipse employers and their families in their finery, or, at any rate, put side by side, some difficulty will be experienced in "telling one from t'other." But surely no one can disapprove of this improved state of things. Certainly spinners, manufacturers, and merchants will not do so. On the contrary they rejoice at the increasing wants of the people and the demand for a better class of material. We can heartily join in this good feeling, for we know it betokens that the masses are becoming more cultured and refined. And who is there who could wish to turn back the progress of the past generation and deprive the working classes of the privileges they now enjoy? Surely none. They have striven hard to obtain them, and have patiently awaited the "good time coming;" and he who would deprive them of their present advantages would be a churl, indeed. We do not much fear any attempt to interfere with the present advantageous state of affairs from those outside their pale. It is rather to be feared that the destroying element will arise from amongst themselves. They possess power which wisely wielded will bring contentment and peace, and in its main prosperity; but wrongly used baneful results will follow. We plead for temperance in all things, in dress, in conduct, in trades-unionism, in fact, in everything which appertains to regulating their affairs in life. If this line of conduct be adopted they will find before them a future that will yield nobler attainments and higher enjoyments than in the past has ever been dreamt of.

THE NEW PRESIDENT OF THE ARGENTINE REPUBLIC.

The Argentine is one of the best of this country's customers in South America. This is a bond of interest which Englishmen always appreciate. It has, however, also one of a more sentimental character, especially for Wales, as within the territories of the Republic, in Patagonia, is a Welsh settlement, composed of a band of enthusiastic Cymry, who seeing that in the old home the English were irresistibly pressing upon them, and that in course of time they would be compelled to succumb and submit to being bodily incorporated in the prevailing race, rather than bend to such a fate have transported themselves, institutions, language, bards, and all to a new land, where they may preserve them in their pristine purity and native vigour. After undergoing unheard-of hardships, the colony seems to have taken root and begun to flourish. This prosperity, we trust, will not be seriously impaired by the political disturbance that has taken place. In addition to this, the *Pall Mall Gazette* has just made known an interesting little fact which will certainly enhance our sentimental interest in the country, and increase our wishes for its welfare. Our contemporary says:—

It is an interesting fact that Dr. Pellegrini, the newly elected President of the Argentine Republic, is a cousin of the late Right Hon. John Bright. His grandmother's maiden name was Priscilla Bright, the favourite sister of Mr. Bright's father.

Jacob Bright, of Green Bank, Rochdale, with whom she at one time lived. She married a Quaker gentleman of London, named Bevan, who went out in the interests of science to Buenos Ayres. Mr. and Mrs. Bevan, in their South American life, maintained very religiously all their Quaker principles, and were much respected in consequence. Mrs. Bevan had two daughters, each endowed with great mental ability, one of whom married a Mr. Pellegrini, an Italian engineer, and the President of the Argentine Republic is one of the sons of this marriage. The enthusiasm caused by his succession to the Presidency must be giving much natural pleasure to his kinsmen in this country. Perhaps, too, one may trace the Bright blood in the fact that one of President Pellegrini's first acts was to declare the liberty of the press.

If these statements be correct, the new President comes of a good strain and may be trusted to do his best for the welfare of the country.

WELL DONE PAISLEY!

This ancient town has long played a prominent part in the textile industries of Scotland, and one which has ever been a credit to itself. Linen, calico, muslins, plain and figured, and imitation cashmere shawls have in succession been its staples. When one manufacture has failed it, another has quickly been taken up and made to pay handsomely. This shews a power of adaptation in the "Paisley bodies" that the natives of many other towns, both in Scotland and England, might envy. The last illustration is perhaps the most remarkable of all. The shawl trade fell before the attractive close fitting jackets and mantles, the manufacture of which, after the invention of the sewing machine, became possible for the million. Paisley found salvation in the arms of its enemy. Linen thread was almost universally used in ante-sewing machine days, such cotton sewings as were made being coarse, poor in quality, and relatively dear. The great weakness of cotton thread, however, was its chief defect, because in hand sewing it was rarely possible to put into garments the number of stitches that would hold them together if cotton thread was used. With the invention and development of the sewing machine, however, a complete revolution was effected. A great demand arose for sewing cottons, level, smooth, fine, and well finished. Paisley quickly took advantage of this, and though its enterprising people at the start had to encounter severe competition from Bolton, Huddersfield, Leicester, and other places in England, it is now generally admitted that Paisley has "taken the cake." The announcement that appeared in our last issue regarding a leading firm enables some conception to be formed of the magnitude of the new industry which the town has made its own, especially when it is stated that there are other firms, one of which is almost equal in magnitude to the one mentioned, whilst there are others in the same business that anywhere else would be deemed large. Another illustration, however, may shew the greatness of the sewing cotton industry even more than the fact referred to, and that is the amount of timber consumed for the purpose of supplying the familiar little bobbins or spools as they are indifferently called. The wood of which they are composed is birch, and mostly comes from Maine, United States. The exports of birch spool bars from Bangor, in that State, to Scotland has increased greatly in recent years, and this year they promise to be larger than ever. Quite a fleet of sailing vessels and steamers are now engaged in the trade. The spool stock is sawed at up-country mills from birchwood timber cut in the hardwood forests of Piscataquis and Washington Counties in Maine, and is shipped in bundles containing from 16 to 64 bars, according to the size of the sticks. It is

expected that 9,000,000 cubic feet of spool stock will be sent from Bangor to Scotland this year. Well done Paisley, say we. It would be interesting to have figured out the number of spools this will cut into, the counts and yards of thread they will carry, the weight and counts of single yarn consumed in the manufacture, and the number of bales of cotton that are consumed for the purpose. We might suggest a number of further questions, but these will suffice, as we suspect the "Paisley bodies" will not prove "over communicative" on these matters, and perhaps it is wise on their part not to be.

A CURIOUS TRADE BAROMETER.

The trade barometer is low in Palermo at present. Our Consul, Mr. W. Stigand, says in a report just issued that:—

It is a remarkable fact that while the exports have increased by £16,121, the imports have decreased by £160,049. These are very remarkable figures, and the explanation of their strangeness is that the purchasing power of the country, in spite of the increase of export, has not been revived in proportion, and that it has not yet had time to rise to its former level. Thus the imports from Great Britain have fallen off by £18,490. The imports from France have, as was natural, fallen also. The imports from Germany have also fallen, and to a greater degree, and that is strange, considering the pains that have been taken to push the German trade. They have fallen by £20,650. Holland has also fallen largely by £14,000. Turkey by nearly one-half (£44,000), in consequence of the falling-off of the importation of cattle. When the table of returns of the articles of import is examined it will be found that the opinion put forth above, that the purchasing power of the island has not had time to recover from the crippling influence of former years, is verified. For example, cotton goods form the chief foreign commodity of goods purchased by the labouring classes, and if their wages are not satisfactory they can purchase no more cotton, and they go mending their rags; a good criterion of the state of the labour market may be formed by the quantity of discordant patches in the dresses of women and children. Now the sale of cotton goods has fallen off by £18,826, an immense falling off for a district so small as Palermo.

Ragged dresses and discordant patches thus form the trade and industrial barometer of Palermo. We are sorry that this should be the case. Once upon a time it was the case in England, but it has long ago disappeared.

SILK-MEN ON THE SHIP CANAL.

The silk trade of this country considers itself one of the most deeply aggrieved industries in the land in regard to transit charges on the railways; and the ever-alert directors of the Manchester Ship Canal Company have not been slow to shew them a more advantageous route by which to send their goods, which they hope in a short time to be able to offer them. Accordingly, they have invited the trade to come and look at it for themselves, and a goodly representative party of silk merchants and spinners of Lancashire, Yorkshire, and Cheshire responded to the invitation, and were conducted over the works on Wednesday. They were accompanied by Mr. H. Boddington, one of the directors of the company, and Mr. Marshall Stevens, who explained to them the various points of interest on the journey. Among the firms represented were:—H. Tucker and Co., Rochdale; G. Wilson and Co., Huddersfield; William Thompson and Co., Lancaster; J. Hadwen and Sons, and Clayton, Marsden and Co., Limited, Halifax; Conder and Co., Congleton; Barkers and Butterworth, Baldwin, Armitage and Co., Ormerod Brothers, Limited, H. Stott, Sons, and Sugden, and R. J. Ferguson and Co., Brighouse; Brearley Brothers, Heywood; Fraschini and Buzzoni, H. T. Gaddum and Co., and Kidd, Boden and Co., Manchester; William Schmidt and Co., Bradford, Yorkshire; George Watts

and Sons, F. Sestier, and W. B. Barchard, Manchester; J. Robinson and Sons, Halifax; Donis Bradwell, Congleton; Andrew Cockcroft, Halifax. With these it could hardly be said that the trade was inadequately represented, though the names of several leading houses do not appear in the above list. The visitors left the Pomona Docks soon after ten o'clock and proceeded in a saloon carriage along the temporary line of railway which runs by the side of the works now in progress. At Runcorn, the party were entertained to lunch, and before they continued their journey Mr. J. Boden proposed a vote of thanks to Messrs. Boddington and Stevens. He reminded those present that while the raw silk industry might be declining in this country the silk-spinning industry was increasing, and he maintained that one-third of the carriage now paid on waste silk which came from the East to London, and had then to be despatched to this district, would be saved by means of the Ship Canal. The vote of thanks was heartily agreed to. After lunch the visitors were taken by steamer up the river Weaver to the Weston Marsh locks, and they then visited the Weaver sluices, ten in number, which are practically completed. They returned to Manchester about six o'clock. Whilst we are not very sanguine that the "divis" of the Canal Company will be much increased by the carriage of either net or waste silks, still it is well that those who use these articles should have personal knowledge of the advantages the Canal can offer them. Though it is not likely that the trade of the port of London will be materially affected by that of Manchester, yet the opportunity may occur to importers of consigning direct to this city, when no doubt it will be utilized. Our own view, however, is that the silk trade of the country will be much more advantaged by the increased prosperity of these districts, resulting from the construction of the Canal, than the latter will benefit from the carriage of the raw material. Still these things act and react upon each other.

THE CONFERENCE OF UNITED CONSULS IN EUROPE.

The Conference of the United States Consuls General in Europe, which has been sitting at the Consulate, Paris, under the Presidency of Mr. St. Clair, chief of the Consular Bureau at Washington, to discuss the best means of carrying the McKinley Tariff Bill into effect, concluded its labours on Monday. Taking into consideration the reports of various French Chambers of Commerce, the Conference adopted a resolution recommending that leniency should be shewn in enforcing the provisions of the McKinley Tariff Bill, and decided that this resolution should be communicated to M. Ribot, Minister for Foreign Affairs, by Mr. Whitelaw Reid. Before separating the members passed a vote of thanks to Mr. J. L. Rathbone, United States Consul in Paris, for having initiated the idea of the Conference, congratulating him upon its results, and expressing regret at his imminent departure from the French capital on his return to America.

The Administrative Commission of the Lille Commercial Museum has issued public notice that they have received, and are now exhibiting, collections of samples of cotton tissues, unbleached, bleached, and printed, of foreign manufacture, which are the objects of current sale in Madagascar; and a collection of samples of foreign woollens and cottons sold at Nanning and Longtchoum in the province of Kouang-Si. Other objects in the museum are varied collections of the products of Spain, Greece, Roumania and the Argentine Republic, which formed part of the recent Paris Exhibition.

Articles.

BOYCOTTING A COTTON MILL.

We commented last week upon the generous liberty accorded to the proprietors of the Melrose Mill, Oldham, by the secretary and committee of the Operatives' Association, who granted the said owners "full liberty of action to obtain a new staff of hands if they could." This, of course, was after they had withdrawn their own members and terminated their engagements at the mill. Ordinary people would have thought that such a permission was superfluous, but then such people don't know that the ethics of trades-unionism and the ethics of the New Testament, instead of running parallel, cross each other at right angles. Hence, notwithstanding the injustice of their cause which we exposed in our last issue and the gracious permission referred to above, we felt that such an attempt on the part of the employer would be obstructed by all the means in their power. There has been no need to wait long to find evidence of this. Already the mill is "advertised" in the local press in the following terms:—

WANTED, all SPINNERS, TWINERS, and PIECERS to KEEP AWAY from MELROSE MILL until the present Dispute is settled.—BY ORDER OF THE OPERATIVES' COMMITTEE.

A few words of comment may be usefully expended upon this action to shew its injustice. Having become dissatisfied with their employment, and made the most effectual protest in their power within their legal right by leaving it, the interest of the men would be to get fresh employment, and as speedily as possible forget their old shop. They have no grievance now, because they have terminated it by their action; therefore it is a piece of malevolence on their part to issue such a public notice, which is contrary to, and in direct contradiction to all humane and Christian sentiment. It is an endeavour to injure their late employer to the greatest extent within their power, whilst standing outside the pale of the law's penalties. That such advertising is one of the old weapons of trades-unionism we well know, and having been very commonly used for a long time past, it has come to be regarded as legitimate. It is one of the tools of the trades-union boycotter, but no one would protest more loudly against such tyranny if applied to themselves than the operatives. Once upon a time in the history of the cotton trade, we believe an operatives' black book amongst the employers was not unknown. In this the names of the drunken, dishonest, or mischief-making operatives were entered, and when one of these was dismissed, he or she did not find it easy to secure employment elsewhere. This plan, we believe, prevails to-day in the manufacturing districts of the United States. It has, however, long been discontinued in this country, as the employers came to feel that its use transgressed the strict grounds of moral right. There were, however, no people louder in their denunciations of it at the time than those whose descendants now use it on every possible occasion against their employers and think it perfectly proper.

It must not, however, be assumed that trades-unionism contents itself with such comparatively mild weapons of offence as the above. In addition, the mill is strictly "picketed," and men who had accepted employment therein have been induced to leave, we will not, at present, state by what means. A handbill, copy of which follows, has been extensively distributed in the

district. We ask from our readers a careful perusal of this document as it is a very instructive one, if instruction on the point were at all needed:—

OLDHAM OPERATIVE COTTON SPINNERS' AND TWINERS' PROVISIONAL ASSOCIATION, ROCK-STREET, OLDHAM, AUGUST 11TH, 1890.

THE STRIKE AT MELROSE MILL.

We wish to inform Cotton Mill Operatives, and the public in general, that there is a strike now going on at the above-named mill, which is situated at Butler Green. Factory workers, both male and female, are requested to KEEP AWAY from the mill until the dispute is settled, and thus shew their sympathy with the efforts of those who are endeavouring to prevent the exercise of tyrannical conduct towards workmen who are deserving of better treatment, while honestly performing their duty. In these days of rivalry and competition, cotton mill operatives should stand true to each other, and defend the cause of labour against unjust attacks from the capitalists. By this means combined labour becomes capable of demanding and obtaining just consideration from employers and managers, in all matters relating to work and wages, and those who try to prevent the attainment of such a worthy object, by selling their body and soul in acting the part of a Black Leg or sneaking knobstick, deserve to be branded as an enemy to their class, and should be treated as such for ever afterwards. This dispute is being supported by the Masters' Association, therefore, it will be seen that combined capital is being used for the purpose of asserting its assumed right to tyrannise over labour, and to cripple it at its will and pleasure. But in spite of such unjust influences, all we ask is, that we shall not have to fight against the operatives as well as the masters, as, if the battle is left to the two associations, we have no fear of the result. Therefore, we appeal to all who are tempted to go to work at this mill, to be true-hearted men and women, and resolutely refuse all offers of employment, no matter upon what conditions, until there is an honourable settlement of the pending strike.

In conclusion, we rely with confidence on the willing support and co-operation of all friends of labour, and this can only be effectually rendered by KEEPING AWAY from the mill which has been declared an illegal situation, until further notice.

On behalf of those on strike we beg to remain,
THE EXECUTIVE COUNCIL.

It will be observed that no statement has yet been made from the unionists' side as to the nature of the dispute, or the tyranny against which they are protesting and struggling. Perhaps it is an accidental omission of the writer of this precious document. It will not be amiss, therefore, to re-state in a sentence what it is. It is a claim by the above association for an acknowledgment by the employers that twinners shall have the right to damp their listings to such an extent as to mildew the yarn when it has been bundled and exported, and this in order that they may increase their earnings, as they are paid by weight. The "tyranny" is that the employer has dismissed a man who did this, and the above-named Association has "struck" the mill in order to compel him to re-engage him. These are the worthy objects the Society is endeavouring to attain, and to the helping of it, in which it has issued the above handbill. Combination is a good principle, and we believe in both employers and operatives possessing and exercising this right. But in its exercise both sides should pay strict regard to the rights of others. The right to combine has its converse: the right to abstain from combining; and this right should not be infringed. But here is an Association which is championing a gross wrong; and if any working man chooses to abstain from entering this organisation, to think for himself, to exercise his own judgment, and to accept employment at an establishment which, in the plenitude of its arrogance, it has declared to be an "illegal situation," he must be branded as a "blackleg" or "sneaking knobstick;" and "as an enemy to his class, and to be treated as such ever afterwards." Really,

these are choice epithets to come from such "honest, true-hearted," liberty-loving, oppression-hating people as the members of the above-named association. They have quite forgot the converse right referred to above, and that the men who abstain from joining them simply are men who retain their freedom from the dictation of "secretaries" and "executive councils," who, instead of being the servants, have arrogated to themselves the mastership of the unions. The men who retain their liberty by avoiding these unions will be much better described by and ought to be called "Free-men," because they are the upholders and sustainers of individual liberty against a democratic movement which is going at headlong pace to despotism, a despotism which will be much more hateful in its influences and disastrous to the best human interests than any political despotism that has ever been read of in history. But "executive councils" do not usually remain content with even the issue of handbills in which the truth dare not be stated even to their own members; and in which the question is begged, or perhaps we should say stolen, and in which all who venture to differ from them are maligned in the manner illustrated above. All round the mill "pickets" are planted, and as abundant evidence in the past has well shewn these are men whose record would hardly be found high for industry and efficiency in work, sobriety and kindness at home, or for the use of kind words and a mild persuasive bearing towards those whom the executive council say "should be branded as enemies to their class and treated as such ever afterwards." What will be the natural construction a "picket" will be likely to put upon such language? We leave our readers to supply the answer, as no doubt their own knowledge will enable them to do it quite accurately. We sincerely trust, however, for the credit of the Oldham workingmen, that the "spinners and twinners," will immediately proceed to restrain their "executive council" in their present proceedings, and convince them that they have exceeded the power intrusted to them in taking the action they have done in connection with Melrose Mill.

THE RENEWAL OF THE FRENCH COMMERCIAL TREATIES.

A report by Sir J. Crowe, analysing the summary of the answers given by the French Chambers of Commerce and Manufacturers to the syllabus of questions issued by order of the French Government, has been presented to Parliament. From a perusal of the summary it is evident that however strong may be the current of protection, there is a powerful undertow in the direction of free-trade—if not absolutely free-trade. With the exception of Paris, Rouen, Marseilles, and Lyons, the Chambers are generally of the opinion that all treaties should be denounced. Some favour treaties for short periods; twenty-seven Chambers advocate a single tariff; others prefer specific and *ad valorem* duties; while thirty-nine Chambers, again, amongst them representatives of all the chief cities of France, wish to negotiate with such countries as may display a desire to give co-relative advantages to France in return for those which may be offered to them from the French side. The chief arguments in favour of this policy are derived from the experience gained in the course of the tariff quarrels of France and Italy, or are based on a lively apprehension of the dangers likely to accrue from isolation, and customs coalitions against France.

In regard to raw materials, the same divergence of opinion as is noticeable in the United States and other Protectionist countries is observable, the wool growers being in favour of duties, while the consumers desire the absolute avoidance of such imposts, unless they are low and universal, or compensated by export bounties, temporary free entry, or drawbacks. The system of drawbacks to repay the exporter for his original outlay on raw material is curiously popular, and almost as frequently advocated as the double system of tariff by weight and value. The agricultural district of Nevers, however, claims 40 fr. per 100 kilos. on wool in mass, 60 fr. on carded, 80 fr. on dyed, and 20 fr. on waste. The butchers of Paris support the agriculturists by the plea that a tax on wool would allow them to sell meat cheaper. Arras inquires whether it might not be possible to take the rates of the German tariffs as groundwork for a French general tariff, subject to annual revision. This is suggested as a practical way of neutralising the effects of the 11th clause of the treaty of Frankfurt. Elbeuf is fiercely protectionist. The spinners of the town consider that the extent of the competition of foreign yarns, chiefly Belgian, justifies them in asking that existing duties should be doubled. Rheims, St. Quentin, Roubaix, and Avesnes are not, however, so much enamoured of what has been termed the Chinese policy of exclusiveness, as they think the general tariff a sufficient protection for spinners. Nimes, Lyons, Troyes, and St. Etienne go much further. The first claims a reduction on yarns used for making tapes, braids, and laces. Lyons would reduce the duties on yarns entering into the weaving of mixed stuffs. Troyes affirms that the yarns used in hosiery should only be protected so far as is positively necessary. St. Etienne would suppress all duties on yarns made into laces. The Syndical Chamber of Textiles of Paris recommends the *status quo*, because such yarns as are taken from abroad are absolutely indispensable, as they cannot be produced in France; and this is specially the case as regards English woollen yarns, mohairs, and certain carded yarns, in which Belgium has a marked superiority. It is not necessary for us to give further details of the analysis which Sir J. A. Crowe has made. Our object is served by culling from the information contained in the report a sufficiently varied range of examples to enable the commercial public of this country to ascertain the drift of opinion amongst our neighbours. And so far as this is concerned we would specially point out the arguments of the Calais Chamber which ought to have been brought forward long ago. French production, says Calais, far exceeds French consumption. Hence the necessity for keeping foreign markets open—in other words, the Calais Chamber does not see the wisdom of jeopardising the export trade by arousing the animosity of foreign buyers, who at present favour the importation of French goods. Havre is also favourable to a moderate tariff, and Lyons is energetic for international arrangements based on equitable and mutual concessions. Lyons further observes that the export trade which gives employment to millions of hands "is at this moment a helpless victim, struggling with the current of protectionism." Lyons, as a manufacturing centre, accepts the maintenance of free trade in pure silk tissues, for which no protection is desired. Marseilles and Troyes are content with the present general tariff. St. Etienne, though divided by the variety of manufactures which flourish in the district, favours free trade in respect of her ribbon manufacture. No one

knows better than the Lyons manufacturers that the free trade policy of this country has been worth millions to them, and they naturally view with disfavour any proposals to increase the barrier against the admission of English goods. But the protectionist mania in France is, we fear, too strong to be affected by the protests of Lyons and other towns supporting similar views. The most serious obstacle to the success of any permanent policy of protection in France is the dissension amongst the protectionists themselves. The manufacturer in many cases, as is shewn by the report above referred to, clamours for free yarn while demanding the imposition of duties on piece goods; the spinner, far from acquiescing in such a one-sided arrangement, demands protection equally with the manufacturer; while both spinner and manufacturer tread on the toes of the poor agriculturist who, if they could lay down the law, would have no protection at all. Added to all these sources of disunion is that of the thinking element amongst the manufacturers themselves, of which those of Calais may be taken as a type. "France produces more than she consumes;" that is the key-note of the whole argument—of the most powerful argument—against such demands as those emanating from Elbeuf. France *must* maintain her foreign trade or fall behind in the race. She has already been injured materially owing to the looseness of the moral laws by which her people govern themselves. We need only point to the census returns as a demonstration of this. What will happen if, besides the injury arising from this cause, there is added that springing from a narrow-minded fiscal policy calculated to check the life-sustaining current of healthy international trade? Let the French Chambers answer the question for themselves. In France, as well as in the States, it is not moral principle but sentiments of pure selfishness which control individual movements in relation to this matter; hence consistency is cast to the winds.

Letters from Readers.

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

THE BOARD OF TRADE AND RAILWAY RATES.

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

SIR,—Press-packed export bales are amongst the very best traffic, as such, which can be carried. They are absolutely cheaper to stow, handle, and pack than any other. Double the weight can be stowed in a truck, of the weight of a truck-load of raw cotton. Yet in the proposals of the Board of Trade Commissioners they are thus classified:—Cotton and linen goods in bales, boxes, cases, packs, or trusses, *c.o.h.p.*, and they do not appear to be "otherwise herein provided," except under the drapery list, which are classed in 3. Yarn, twist, and welt, cotton and linen, in bales, bags, wrappers, cases, boxes, skips, or casks, classed in 2. At present these goods pay 6s. 2d., station to station, Manchester to Liverpool. They could be charged at 12s. 8d. and 11s. respectively, under the proposals. Of course, the proposals are maxima only, but shippers should look a little ahead, and think whether it is not worth while to ask for a reasonable place in the classification which will soon be fixed. There are many articles in Class C which are worse carriage than export bales.

Export bales should certainly be distinguished in the classification from ordinary home packs. If, at a future time, the railways should be taken over by the Government, and the classification as now, along with maximum rates, about to be fixed, should be taken as the basis of actual rates, the export trade would be unpleasantly surprised.

At the present exceptional rate of 6s. 10d. they are paying for these heavy bales, almost like stones, double the rate which feathers pay in Germany.—Yours, &c.,

EDWARD DODSHON.

2, Ducie-street, Oxford-road, 9th August.

ANSWERS TO CORRESPONDENTS.

G. MAZZA (Milan).—The new bleaching compound, "Ozonin," was patented by Dr. L. Schreiner, Stuttgart, Seestrass 44, Class 8, No. 52,205, 3rd Oct., 1889. This answers your inquiry.

MESSRS. SORADJEE AND CO. (Bombay).—We do not remember the name of the maker of the cotton comber described in Mr. Richard Marsden's work on Cotton Spinning, but no doubt if you communicate with Mr. Joseph Imbs, the inventor, whose address is 48, Rue de Bondy, Paris, France, you will very probably be able to obtain all the information you require.

INQUIRER (Newtown, Montgomeryshire).—We are not yet in receipt of the information necessary to answer your query, but hope to be in a short time.

C. T. (Stockport).—To answer your inquiry would involve an expenditure of time and labour quite out of proportion to the value of the information when obtained, whilst the results would be very uncertain for purposes of comparison. It would be much safer to take the materials in their mercantile forms, and quotations can be obtained from the various mercantile reports that are issued by dealers, who would doubtless supply them on application.

FRENCH TEXTILES IN THE FAR EAST.—The following translation of an extract from a French paper on the progress which French traders are making in French Indo-China must no doubt be taken with a grain of salt. Nevertheless, it does indicate that some progress is being made by our Continental neighbours in competition with ourselves and others in the Far East:—"French industry is achieving in Annam a victory which is not to be despised. French cottons are commencing by their quality to beat their English and German rivals out of the field. A French house at Hue, the same which has already had a contract with the Court of Annam for the supply of half a million Lyons silks, is now selling to the native population enormous quantities of cotton from the Vosges manufactories. They have been unable to supply the demand, and have had to telegraph to the manufacturers increasing their orders. The native purchaser, having compared price and quality, has adopted these goods, neglecting those formerly in use. It appears that the Chinese merchants, who have considerable stock on hand, are greatly concerned, and have made overtures to the French firm with a view to the re-establishment of former conditions. If the taste of the purchaser continues in the same direction they will either have to sell their goods at a loss or retire from a market which up to the present no one has disputed with them. They will be compelled, without much more delay, to obtain their supplies from French sources."

Technical Education.

THE RESULTS OF THE CITY AND GUILDS EXAMINATIONS.

(Continued from page 98.)

The additional following results of the recent examinations held by the City and Guilds of London Institute for the promotion of technical education are to hand:—

MACCLESFIELD.

The following medals and money prizes have been won by students of the Macclesfield Technical School:—

Silk Weaving.—Honours Grade: 1st prize, silver medal, and £3; 2nd prize, silver medal, and £2. Ordinary Grade: 1st prize, silver medal, and £2; 2nd prize, bronze medal, and £2.

Silk Throwing and Spinning.—Honours Grade: 1st prize, silver medal, and £3; 3rd prize, bronze medal. Ordinary Grade: 1st prize, silver medal, and £2; 2nd prize, bronze medal, and £2.

Mr. John J. Taylor is the weaving master, and Mr. Sadler is the throwing master. Mr. Taylor is also the lecturer on cotton weaving, etc., in the Harris Institute, Preston, and the Blackburn Technical School.

MANCHESTER.

The textile classes of the Manchester Technical School show the following results:—

Cotton Spinning.—Honours Grade, 1st Class: Frederick Long, Frank Conliffe, Henry Patchett, Ben Belfeld, Robert H. Knowlson. 2nd Class: Charles B. Smith, Samuel North, Arthur Sutcliffe, Percy Taylor, Eugene Hoffmann, Frederic A. Green, Abel Dearnaley, Richard F. Haworth. Ordinary Grade, 1st Class: Wilhelm Kuffler, William H. Bowker, Frederic W. Jones, William J. Orr, Samuel Wakefield, James A. Thornton. 2nd Class: Robert W. Bennett, Paul Sagar, William E. Travis, Edward Tilston, Ernest F. Heidenreich, Harold Buckley, Solomon D. Torres, John R. Albiston, Edgar E. Bailey, Owen Rowland, Frank Gomersall, William Gregory, Walter S. Curtis, Joseph Muir.

Cotton Weaving.—(The prize medallists were recorded on page 76). Honours Grade, 1st Class: Herbert Tweedale, James Hudson. 2nd Class: Henri Honegger, Robert Riley, Donald J. Ross, George Kellat, William Bleakley, Arthur Pownall. Ordinary Grade, 1st Class: John R. Warburton, Edwin Andrew, John Riley, Ambrose Gratton, Richard H. Gibson, John Holt. 2nd Class: John T. Sherlock, Ernest F. Heidenreich, William H. Denton, James A. Clarke, John Thomas, Edward Lane, Rudolph Gennsens, Thomas Dawson, Owen Bowland, Frederic A. Green, Arthur Watts, Harold Bridge, Frank Hampson, John F. Blumer, Herbert Spenser, Solomon D. Torres, John Whitworth.

Bleaching and Printing of Calico and Linen.—(The prize medallists were recorded on page 76). Honours Grade, 1st Class: Charles Edmeston, George W. Wilson, Edgar H. Pickup, John Walton. 2nd Class: Albert Howard. Ordinary Grade, 1st Class: Ernest H. Taylor, Joseph Whitehead, Samuel Dausiger, Samuel Lord, Frederick W. Appleton. 2nd Class: William H. Young, Robert H. Mercer.

OLDHAM.

Oldham Equitable Co-operative Society Class:—**Cotton Spinning.**—Honours Grade, 2nd Class: Jarvis D. Kent, John Harrop, Joseph L. Greaves, Wm. H. Taylor, Christopher Harris. Ordinary Grade, 1st Class: B. Turton, W. H. Hardman, F. Clough, J. R. Larton, Thomas H. Heath, John J. Neid, John Wm. Ardern, 5th prize (a bronze medal). 2nd Class: Richard Nuttall, John H. Ogden, James H. Holden, Thomas Tasker, George Boswick, Ambrose W. Thomas, Jesse Braddeck, Albert Eastwood, Benjamin Dankerley, Albert Booth.

SHIPLEY.

THE SALT SCHOOL.—The following results of examinations have been received:—

Cloth Weaving and Design.—Honours Grade, 1st Class: Fiorello Bentley; 2nd Class: Lovel Bentley, Mitchell S. Clough, Charles H. Tinsley, Wm. H. Wyrill, James Shackleton, and John Teale. Ordinary Grade, 1st Class: Alfred Deane and John Feanside; 2nd Class: Wm. Gray, Dan Jeffries, and Arthur Lancaster.

Designing.

NEW DESIGNS.

OXFORD SHIRTING.

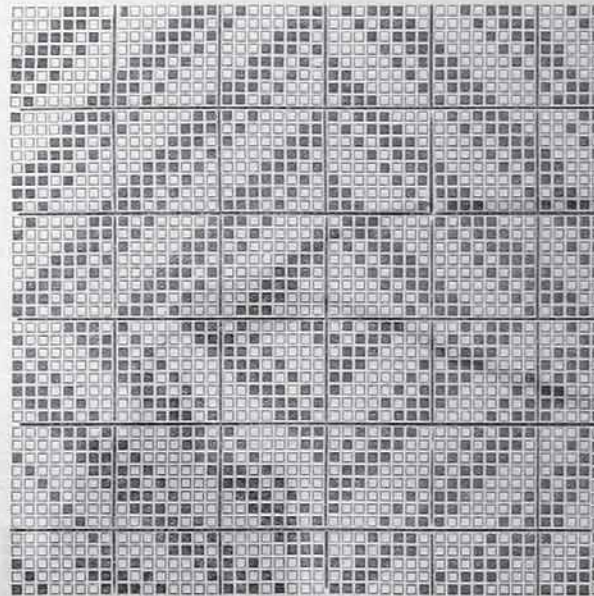
This design is for a new Oxford shirting, or dress material in linen and cotton. If woven grey it could be piece-dyed in all the fashionable shades and tints so much in vogue, and if bleached would be attractive as a washing material for young girls' wear. By following the draft and tread with any two colours (say blue and white, brown and white, lilac and white) in warp and weft, a good check effect would be produced; 48 reed, 3 in a dent, or 72 ends per inch of 24's for warp, 72 picks per inch of 24's weft. If made in cotton warp, same counts, but if cotton warp and linen weft the latter to be 60's linen counts. Space will not permit the draft to be given in the usual way, so we have adopted figures as shewn in the pegging plan. Those at the side indicate the draft, whilst those at the bottom denote the treads. The draft, then, of this design will be:—1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 2, 3, 4, 5, 6, 1, 9, 8, 7, 6, 5, 4, 3, 2, 1, 9, 8, 7, 6, 5, 4, 3, 2, 9, 8, 7. The pegging plan or tread must correspond with the draft in the same order, viz. —1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 2, 3, 4, 5, 6, 7, 8, 9, 1, 2, 3, 4, 5, 6, 1, 9, 8, 7, 6, 5, 4, 3, 2, 1, 9, 8, 7, 6, 5, 4, 3, 2, 9, 8, 7. If this order of tread- ing be dispensed with, and 1, 2, 3, 4, 5, 6, 7, 8, 9 used repeatedly, a stripe will be formed which may be made in two colours, weft one colour

only, also a navy blue ground, with primrose or any light-tinted wefts. If properly made, a really useful and knock-about dress or shirting material can be produced which would well suit the public taste.

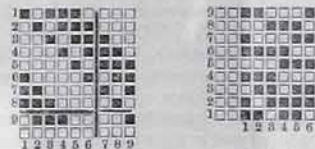
AFRICAN CLOTHS.

No. 1.—Made in a 48 reed, two in a dent, 24's warp and weft, 40 picks; all dark blue; 6 to the round; 9 shafts. Warp pattern and draft: 60

dark blue; 6 orange, 6 dark blue all on shafts marked 1, 2, 3; then 24 of white, and 24 of blue drawn in end and end, the dark blue on shafts marked 1, 2, 3, the white on the shafts marked 4, 5, 6, 7, 8, 9 in the following order:—4, 5, 6, 7, 8, 9, 8, 9, 6, 7, 4, 5, 4, 5, 6, 7, 8, 9, 8, 9, 6, 7, 4, 5, and 6 dark blue, 6 of orange on 1, 2, 3. Total ends in pattern 132, or nearly three inches. White selvage; the ground in any pattern of these African cloths is always very dark blue.



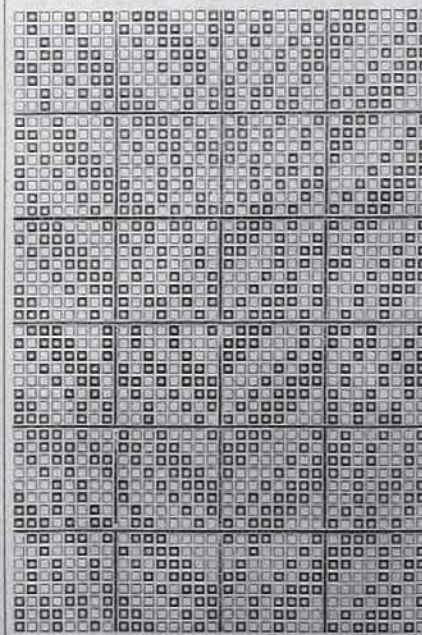
DESIGN FOR OXFORD SHIRTING, ETC.



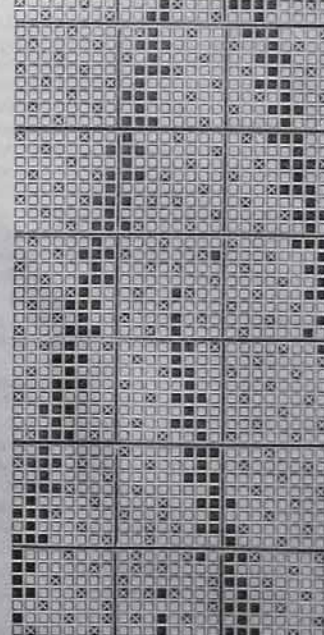
PEGGING PLAN.

AFRICAN PEGGING PLAN.

No. 2 AFRICAN.



DESIGN 175.



DESIGN 174.

No. 2.—In a 72 reed, 2 in a heald, one heald per dent of 24's warp, 40 picks of 16's weft; all dark blue. Pattern of warp and draft: 12 of white, 12 dark blue, 2 light blue, 12 dark blue, 2 of light blue, 12 dark blue, 12 white all on 1, 2 shafts; 2 red, 12 orange, 2 red on 3, 4, 5, 6 shafts; total ends 80, and four to the round. See pegging plan.

No. 3.—Same reed, counts of yarn and picks. Pattern of warp and draft: 6 dark blue, 2 light blue, 6 dark blue, 2 orange, 2 dark blue, 2 orange 6 dark blue, 2 light blue, 6 dark blue, all 2 in a heald on 1, 2, shafts; 12 white, 4 of very bright red, 12 white all two in a heald on 3, 4, 5, 6 shafts. Number of ends in full pattern, 62. Weft all dark blue; or two shuttles, 4 of white, 30 dark blue.

No. 4.—Plain cloth on two shafts, two in a heald, one heald per dent, 56 ends on one inch; 20's warp; 36 picks 16's weft per inch. Pattern of warp: 2 dark blue, 2 red, 2 dark blue, 2 red, 2 dark blue, 2 red, 2 dark blue, 2 white, 2 dark blue, 2 red, 2 dark blue, 2 red, 2 dark blue, 2 red, 2 dark blue, 20 white. Total ends in pattern, 50. We have in former issues of this journal urged the necessity of reaching the African market with a class of patterns suitable to the native taste, and these three patterns will, if tried, give satisfactory results.

FANCY WAISTCOATINGS.

Though the fancy waistcoating trade cannot as yet lay claim to a position of the greatest importance, still the quantity of material produced for wear in this form is by no means small, and to some firms it has for years been a source of considerable profit. Of the type of design used, it may almost be said that nothing comes amiss; patterns produced by colour, colour and weave, warp and weft flush, extra

warp or weft, and double cloths, are all observable amongst this class of materials, and upon which is expended the thought of some of our best textile designers.

Design 173 is a suggestion for utilisation in this class of goods. The plan of the pattern is analogous to one supplied in an earlier article, consisting practically of interlacing lines. The ground is of the 2 and 2 twill, this weave being selected to shew up the warp and weft ribs to the best advantage. The warp and weft ribs being edged with a plain thread will shew up neatly and decided, giving the effect mentioned, viz., intersecting lines. As an additional embellishment two spots have been introduced which should be developed in either one or two colours by extra silk weft or warp, according to circumstances. The following set is suitable:—

- Warp.
All 2/30's worsted.
14's reed 4's.
- Weft.
14 picks, 15's worsted.
1 pick silk } for 8 picks.
1 pick worsted }
28 picks worsted.
1 pick silk } for 8 picks.
1 pick worsted }
14 picks of worsted.
56 picks of ground per inch.

The following would prove an effective system of colouring:—Warp, black; weft (worsted), dark blue; extra silk, blue green and white. The silk spot should be wefted 2 of white, 4 blue green, 2 of white. Other systems of colouring will readily present themselves.

If a more elaborate pattern is required, the lines of weft and warp rib may be developed in silk warp and weft, in which case by the proper introduction of colour—for example, wefting 1

and 1—quite intricate and extraordinary effects may be produced.

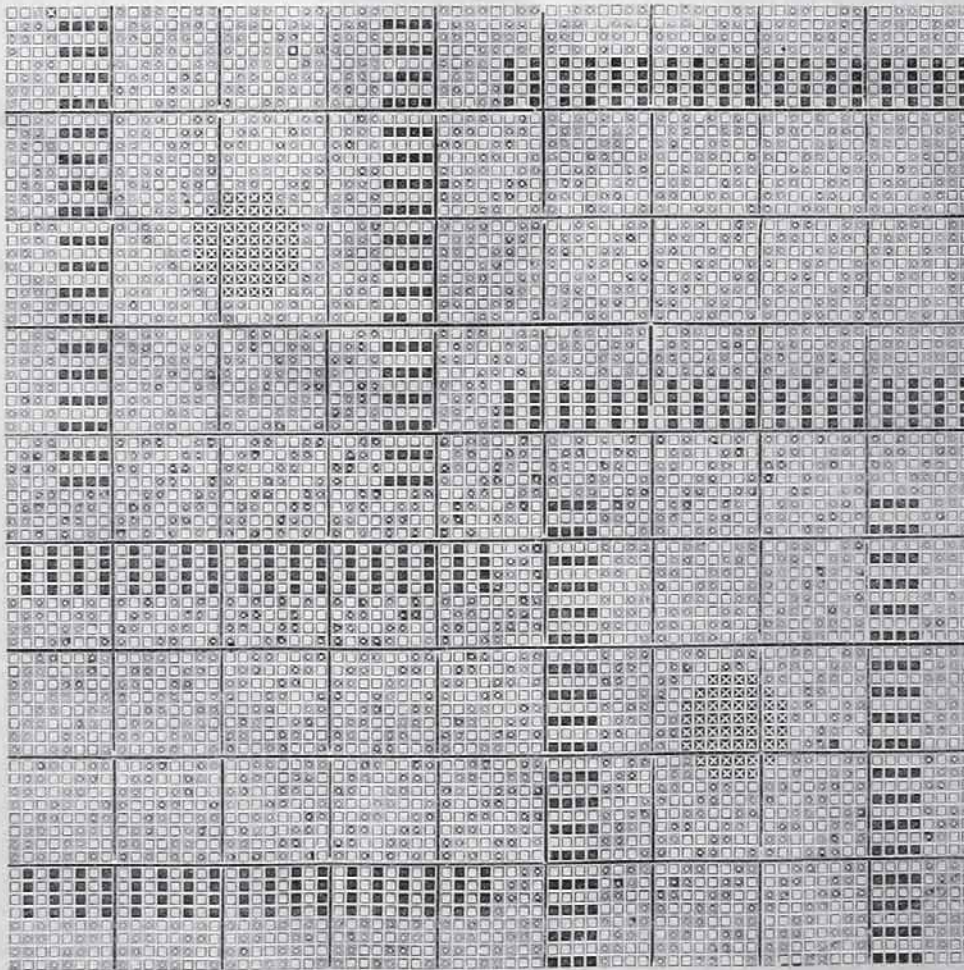
If a cheap cloth is required, the 5-end sateen may be used as the ground weave, and a low weft be introduced, since it would only come to the surface to form the ribs. Care must be taken to weave the cloth on the square, and also to obtain the same precision in both the warp and weft ribs.

Design 174 may be utilized in various ways. Here we have the conditions indicated above, viz., a warp-face weave for the ground, so that an inexpensive weft may be used, thus cheapening the production. The plan of the design is summed up in the words, "opposing weft twills on warp sateen ground." A fine warp and thicker weft will here prove effective, since there is no warp rib to require balance in the weft rib.

This type of design may prove very effective for mantle cloths if considerably enlarged. As such it shall claim our attention in the future.

DRESS GOODS.

Neat yet effective styles of dress fabrics are often produced by paying great attention to the proper blending of colours for both warp and weft yarn. Having, then, obtained a suitable blend, the next thing to consider is the weave to apply. Now, in the first place, the weave must not be too decided or the effect of the blend will be unobserved; nor must it be of a nature to detract from the firmness of the fabric, yet it should give to the cloth some interest. A weave fulfilling these conditions is supplied in Design 175, which interweaves very much like the 2 and 2 twill, and yet will be found to impart just the interest needed for the yarns mentioned. The set should be the same as for the 2 and 2 twill.



DESIGN 173.

Machinery and Appliances.

HORSE-HAIR CLOTH MANUFACTURE AT SHEFFIELD.

MESSRS. SAMUEL LAYCOCK AND SONS.

Amongst the most interesting works opened to the members of the Institution of Mechanical Engineers were those of Messrs. Samuel Laycock and Sons, Portobello-place. They are devoted to the manufacture of horse-hair cloth and curled hair for stuffing cushions. It is the preparation of the former that is of the greatest interest to mechanical engineers, as it involves the use of a loom which will be doubtless quite novel to the majority of makers and users of textile machinery. When it is remembered that weft of horse-hair cloth cannot, in the most extreme cases, be above 5ft. in length, that the material is extremely hard and elastic, and that each filament is considerably thicker at one end than the other, it will easily be seen that the designer of a loom to weave such material with rapidity and success has no easy task set for him.

These difficulties have, however, been overcome by Mr. W. S. Laycock, and the combination of ingenious devices which he has originated has resulted in the production at a moderate price of that beautiful semi-transparent fabric which supplies an ideal material for the sunblinds of railway carriages, steamships, etc., as it admits of sufficient light without the glare of sunshine. When these blinds are dyed a bright amber colour, as in the case for instance of those on the White Star steamers *Majestic* and *Teutonic*, says our contemporary, *Engineering*, from whose columns we make this extract, the result is especially pleasing, the effect being that of a diffused and mild sunlight.

The weft of this cloth is of horse-hair, while the warp is of cotton or flax. The warp, however, is buried in the hair, so that it does not show in the finished material. The horses' tails come chiefly from South America and Siberia. In the former place horses are slaughtered in large numbers, every bit of the carcase being used for some purpose. The flesh is ground up into manure (so it is said), some of the bones follow the same course, whilst others are used for turning, etc. The hide is made into leather, the hoofs into glue, and, finally, the tails and manes into hair cloth or "curled hair," with which to stuff cushions. The longest hair, of which Messrs. Laycock have record, is six feet, but such a specimen is extremely rare. The tails, as they arrive from abroad, are in a very untidy state, being just mops of hair, generally plentiful interwoven with burrs. These tails have to be carefully combed out and washed, after which the various lengths are sorted out by hand. The next process is bleaching, unless it is intended to weave the cloth in natural colours. It is a fact that there is considerable difference between horse-hair that has been cut from the animal whilst alive or immediately after being killed, and that which has been taken from the beast when it has been dead some time. In the latter case, the hair is dull and opaque, whilst in the former it retains its transparent and glossy appearance. Some of the bundles of selected white hair that Messrs. Laycock have form really beautiful objects when tied tightly together, looking more like batons of a transparent ivory than wisps of hair.

The next process is to dye the hair when an artificially coloured material is required. There are, we believe, many secrets in connection with this art; and as the trade is in few hands they appear to be well kept. It requires a very different mode of procedure to dye horse-hair to that followed with other materials, even wools and other kinds of hair, and there are more than ordinary difficulties in the way. In the case of Messrs. Laycock these difficulties appear to have been overcome, as they produce fabrics containing blues, reds, greens, and yellows of apparently all shades.

There are still at these works a large number of old styles of hand-loom for weaving hair cloth. These looms are each operated by two

women, one "serving" the hair whilst the other draws it through the warp. The bundles of hair are placed in two troughs, one on each side of the loom, all the thick ends being arranged to lie together. In connection with each trough is a selecting instrument which descends, and by means of a spring gripping device takes a hair from the bunch and holds it in position until it is taken by the shuttle. It is necessary that this gripper should leave the hair at the right instant of time, not too soon, as in that case the hair would be dropped, whilst if it held on too long the hair would be dragged through the jaws of the catch, the result being that they would last but a very short time. The most curious feature about the selecting instrument is, that should it fail to secure its hair at the first try, it will make another effort; and if still unsuccessful, yet a third. Nothing in the way of mechanism could be more intelligent. The selector does even more than this. Should it not get a hair to present to the shuttle upon the third attempt, it puts in action the weft stop motion, which prevents the shed from changing, and stops the let-off and take-up motion. The selector on the opposite side then presents its hair in turn and no imperfection in the fabric results. Some of the Waltham watch machinery, and of the Singer Sewing Machine Company's machinery appears almost intellectual in its automatism, but Mr. Laycock's selector affords an object lesson of high moral attributes. The way in which it recognises it has failed, and at once proceeds to try again and again without discouragement, and then, when there is no longer hope that it can succeed itself—for the impatient shuttle never waits for the fourth attempt—giving its partner on the opposite side an opportunity to repair the fault, might be laid to heart by many with advantage. The shuttle itself has jaws to grip the hair, taking hold and leaving go just at the right instant.

It would be manifestly impossible to describe how these motions are carried out without the aid of elaborate illustrations. Horse-hair cloth is woven from 14 in. up to 36 in. in width.

The preparation of curled hair is comparatively a simple matter. The hair after washing is carded and then spun into ropes so as to give it the kink or curl which affords the springiness necessary to a comfortable cushion.

It may be stated that Messrs. Laycock work up from 15 to 20 tons of horse-hair per week.

Bleaching, Dyeing, Printing, etc.

NOTES ON BLEACHING.

In the middle of the last century bleaching was almost entirely confined to linen. Cotton was bleached but rarely, until towards the end of the century, when cotton bleaching became very important. The method of bleaching was simple but tedious. The goods were steeped in potash lye (soda being unknown then) for a few days; afterwards they were laid in buttermilk for a week, and were next laid upon a field for a week, when the potash and buttermilk treatment was repeated. After some eight months or so of this treatment the cloths were bleached.

Dr. Home, an Edinburgh chemist, suggested using very dilute sulphuric acid in place of the buttermilk, rightly arguing that it was the acid in the latter that was the effective agent. This was a great improvement; the operation was made more definite, and the time required was reduced to nearly one-half.

The bleaching properties of chlorine early attracted attention after its discovery in 1774 by Scheele, and in 1785 Berthollet proposed its use as a bleaching agent. A little later James Watt, the great engineer, who was also a bit of a chemist, introduced it into Scotland, first at the Clober Bleach Works, from whence its use gradually spread, and about the same date Dr. Thos. Henry, of Manchester, introduced it into the Lancashire bleach works. At first it was used in the gaseous state, the gas being obtained

by heating a mixture of salt, manganese oxide, and sulphuric acid; but there were many objections to this system, chief amongst which was the great inconvenience the workmen suffered from its irritating action on the lungs. Then the gas was passed into water and a saturated solution was obtained, into which the goods were placed, and the bleaching was thereby affected. About 1792, however, as the use of a saturated solution was not altogether satisfactory, owing to its unstable character, the practice came about of adding caustic potash to the water, when a solution richer in chlorine, known then and now as "Eau de Javelle," was obtained, which was more stable, and was found to be more energetic in its action, partly owing to the fact that weak acids were capable of liberating the chloride from it in a nascent and therefore in a very energetic form. About six years later—1798—Chas. Tennant, of Glasgow, patented the use of lime-water, into which chlorine gas was passed and a bleaching liquor was obtained that soon came extensively into use, and it still has a limited consumption. A year later Tennant patented the use of dry lime and made bleaching powder by the process still in use. Since then—a period of nearly 100 years—bleaching powder has continued in use for the bleaching of cotton and other vegetable tissues to the exclusion of almost all other agents.

One part of the process, and a very essential part it was and is, is the treatment with alkali. At first potash, the essential constituent of which is the carbonate of potassium, was the alkali used; then it was discovered that by causticising them by means of milk of lime a more powerful detergent was obtained; and later on (but when it is not definitely known), someone introduced the use of lime by itself, possibly arguing that as lime increased the action of the potash it must have powerful properties of its own. Since its first introduction the "lime boil" has been an essential feature of the modern bleaching process.

When caustic soda was first used in the bleaching process in place of potash, is somewhat uncertain, but in 1837 we find the use of soda ash being introduced into English bleach works from America, and the process was long known as the "American" process. This same process also made great use of the lime boil, and it may perhaps be said that from this time the lime boil became universal, having previously only been used in a few places. In 1837 Scheurer Rott first proposed the souring after the liming—a method that came into universal use very soon after, and effected a marked improvement. Three years later (in 1840) another addition, namely, the use of resin soaps in place of one of the ley boils, was introduced, and it now forms a very important part of the modern bleaching process. At this period all the various boils or bowkings, as they were called, were done in open wooden bowking kiers and consequently at low pressures. The results were rather irregular, and in 1844 the use of high-pressure closed kiers was introduced, and they are now almost entirely used in modern bleach works. Since that time a few minor improvements have been made in the construction of the machinery used, but none of any importance in the process itself until 1883, when Thompson patented his process, which consisted in boiling the goods in a closed kier with caustic soda, then treating them with bleaching powder, and afterwards with carbonic acid. Thompson's method was described in the *Dyer* for 1884, and contained the germ of a good process, which, however, failed in his hands, owing to his not having sufficient mechanical knowledge to enable him to construct apparatus so that the principles of the process might be adapted to get through the enormous quantity of cloths necessary in these times. The matter was taken up, however, by Messrs. Mather and Platt, who first produced a continuous system of boiling, etc., kiers, and, finally, the great feature of the Mather-Thompson process—the steamer kier, wherein the goods could be treated with the caustic soda—was invented about 1886. This process is coming largely into use, although there is great diversity of opinion amongst practical bleachers as to its capabilities. Lately, attempts at bleaching by electricity, which resolve themselves into pro-

duction of bleaching compounds by electrolysis of alkaline chlorides, have been patented by Hermite and others, but at present they are practically in the experimental stage, having not yet been developed to such an extent as to be able to compete with the ordinary process in point of cost.

FAST COLOURS ON CARPET YARN.

The following recipes will be found very useful by dyers of carpet yarn, as a range of 20 useful shades that possess the great merit of being fast. It can scarcely be claimed that all will resist equally well the action of light, acid, etc., but the worst will resist these injurious agents very well indeed, and the best are quite fast.

Except where otherwise stated, the process consists in mordanting the yarn at the boil for 1½ hour, rinsing out, then dyeing; this is done by first working for half-an-hour at from 80 to 90° F., then gradually raising to the boil, and dyeing at that temperature for one hour. Percentages are given as being the most satisfactory manner of expressing proportions.

Bright Scarlet.—Mordant: 10 per cent. alum, 6 per cent. tartar. Dye: 2½ per cent. alizarine red S powder, 1½ per cent. ponceau B extra.

Crimson.—Mordant: As above. Dye: 2 per cent. alizarine red S powder, 2 per cent. cloth red.

Dark Maroon.—Mordant: 3 per cent. bichromate of potash, 2½ per cent. tartar. Dye 4 per cent. alizarine red S powder.

Brown.—Mordant: as last. Dye: 1½ per cent. alizarine brown, ¼ per cent. alizarine red S powder.

Dark Violet.—Mordant: as last. Dye: 1 per cent. Gallein powder.

Blue.—Mordant: as last. Dye: 5 per cent. alizarine blue paste.

Navy.—Mordant: as last. Dye: 10 per cent. alizarine blue paste, 0.6 per cent. patent blue.

Orange.—Mordant: as for scarlet. Dye: 2 per cent. alizarine orange N powder.

Olive Yellow.—Mordant: 3 per cent. bichromate of potash, 2½ per cent. tartar. Dye: 2 per cent. alizarine yellow GG powder.

Chrome Yellow.—Mordant: as for scarlet. Dye: as last.

Pale Fawn.—Mordant: 1 per cent. each bichromate of potash and tartar. Dye: 0.015 per cent. alizarine yellow GG powder, 0.02 alizarine orange N powder.

Ash Grey.—Mordant: as last. Dye: 0.03 per cent. alizarine brown powder, 0.25 per cent. alizarine yellow paste.

Pale Sea Green.—Mordant: 1½ per cent. each bichromate of potash and tartar. Dye: 0.3 per cent. alizarine blue paste, 0.1 per cent. patent blue.

Pale Salmon.—Dye: 1 per cent. alum, 2½ per cent. tartar, 0.02 per cent. alizarine orange N powder.

Pale Mode.—Mordant: 1 per cent. each bichromate of potash and tartar. Dye: 0.05 per cent. alizarine brown powder 0.05 alizarine yellow GG powder.

Dark Olive Yellow.—Mordant: 3 per cent. bichromate of potash, 2½ per cent. tartar. Dye: 1 per cent. alizarine yellow GG powder, 0.15 per cent. alizarine brown powder.

Dark Green.—Mordant: As last: Dye: 0.7 caeruleine G powder, 0.35 per cent. alizarine yellow GG powder, 0.7 per cent. patent blue.

Scarlet.—Mordant: as last. Dye: 1½ per cent. alizarine orange G powder.

Sage Green.—Mordant: as last. Dye: 0.8 per cent. alizarine yellow GG powder, 1 per cent. alizarine blue paste, 0.3 per cent. alizarine blue paste, 0.3 per cent. patent blue.

Pale Sage Green.—Mordant: as last. Dye: 0.8 per cent. alizarine yellow GG powder, 0.5 per cent. alizarine blue paste, 0.2 per cent. brown powder, 0.15 per cent. patent blue.

ANILINE DYES IN CHINA.—No aniline dyes were imported into Newchwang last year, at Kewkiang they formed a considerable article of trade; magentas, greens, and blues being the most important.

The antimony ammonium fluoride double salt is made by Radand Hauser as follows:—132 parts ammonium phosphate are dissolved in 1,040 parts of hydrofluoric acid of 50 per cent. and 1,168 parts antimony oxide added. On cooling down the double salt, having the formula $8SbF_2 \cdot 2NH_4F$, crystallises out. The mother lye on evaporation yields all the fluoride present and finally contains only free phosphoric acid. Recrystallised the salt contains the equivalent of 77.5 per cent. of oxide of antimony and resists the action of air well.

RHODAMINE S AND RHODAMINE S EXTRA are two new dyestuffs recently put on the market. They dye fine pinks, and therefore may be used as a substitute for safflower or phloxin. The shade is faster and more brilliant than that obtained from safflower. They are strong colouring matters, 1 oz. being sufficient to give a fair pink on cotton. They can be dyed on cotton without mordant in a bath acidulated with acetic acid at a temperature of from 120° to 150° F.; the lower the temperature the yellower the shade. On cotton mordanted with tannin and tartar emetic the shade gets bluer, but it is less brilliant in tone although faster to washing. On silk they are dyed either in a neutral bath for blue shades or with acetic acid for yellow shades. Silk and cotton mixed goods can be dyed level shades; it is better to use sulphuric acid with this class of fabrics. Half-woollen fabrics can be dyed very well in an acetic acid bath. Jute is dyed in a neutral bath. Rhodamine S can be printed on cotton with either acetate of alumina or tannin; the latter gives blue shades faster to washing than the former.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, AUGUST 2ND.

The Federal Election Bill, equally with the Tariff Bill, now attracts public attention. Senator Hoar, of Massachusetts, is a zealous supporter of the former measure, and he used some decidedly intemperate language in regard to it at Washington on Monday last, at the Republican Senatorial Caucus. Several Senators intimated that the Tariff Bill was the one piece of legislation that should be pushed through to completion, even if the Elections Bill should go to its death. This suggestion aroused Senator Hoar, and he gave vent to his opinions in the following surprising language: "While I favour passing the Tariff Bill, sooner than that this Congress should not pass the Federal Elections Bill, I would prefer to see every manufacturing establishment in Massachusetts burned to ashes and the people of that State required to labour in callings in which they could not make more than 50 cents per day, and be required to live on codfish!"

There can certainly be no doubt as to Senator Hoar's intense desire to pass the Federal Elections Bill. The friends of Lodge, however, will be quick to use the violent language of Senator Hoar against him, and it looks now as if the Massachusetts statesman, in his effort to outdo Lodge, is in danger of outdoing himself. Fifty cents a day and codfish diet will not be a popular rallying cry in a senatorial contest.

The *American Wool Reporter* does not support the Chinese policy of commercial exclusiveness which finds favour with the Republicans. In an article on the wool industry of the country, the *Reporter* says that superfineness of fibre has been and must be sacrificed in the United States to weight of fleece and mutton. Our farmers can be engaged in better business than keeping sheep which shear a pound and a half of clear wool and are good for nothing else. But there is also a great need in the United States of the long, fine delaine wools of Australia, the short, fine felting wools of the Cape Colony, the coarsest carpet warp wools of southern Russia, the coarse carpet filling wools of the East

Indies, and the fleeces of many other varieties of sheep which it would be as foolish for Federal laws to attempt to substitute for the fleeces suited to American climatic and social conditions as it would be to grow oranges in Alaska and fur seals in Florida.

What the American wool industry requires is not free carpet wool and taxed clothing wool, nor free South American fleeces and dutiable Australian. We need such laws as will permit our manufacturers to make these selections of raw material, differentiated by soil and climate and other conditions beyond the control of man, which will enable them to compete in their own home markets with the manufacturers of England and the Continent.

Fortunately for European manufacturers this country is not likely to have free wool yet awhile. The wool growers are naturally of the opinion that what is sauce for the goose is sauce for the gander, and immediately the Eastern manufacturers succeed in obtaining free raw material, a large section of the Protectionist party, as represented by the sheep men of the West, would go over *en masse* to the camp of the enemy.

Spring orders for woollens have not been placed freely. Raw material is, however, in large demand at the mills, and production is maintained at a high level. The delay in tariff legislation is naturally an embarrassing feature, and the market, for that reason, does not display the features usual at this period. Importations have been very heavy, and it will be impossible for domestic manufacturers to experience any benefit from the McKinley Bill until next year. This fact they recognise, and sales are being made at low prices. Twilled dress worsteds, 33 to 44-in. wide, have been produced largely by the American manufacturers, the Knicker styles being principally employed. The designs are, of course, slavish imitations of European effects.

A debate from different parties on the first origin of woollen cloths manufactured in the United States prior to the construction of the Hartford Woollen Company's buildings in 1788, has been proceeding in the columns of the *Hartford Times*.

In searching for old-time relics of the previous century, one correspondent came accidentally across a specimen of the first number of the *Connecticut Courant*, a paper that favours the idea of the manufacture of woollen cloths before the year 1764. He produced from the original sheet a close imitation of a part of the printed document on paper but a trifle better than our common wrapping paper. It signifies from the above record that on Long Island was first established the manufacture of woollen cloths in the United States. If the Rowley (Mass.) manufactures began furnishing woollen cloths for the early settlers in the year 1638, it is a little singular that the chief editor of the centenary *Courant* to-day should be ignorant of the fact. That time, 1638, was but three years after the first settlement of old Windsor by Roger Ludlow and his colony from Boston Bay, October 1635. All woollen goods at that date used by the first settlers in Massachusetts were, if we credit the record of John Winthrop, an early Colonial Governor, imported—and dear at that. And that is one reason he requested them to add no expense for getting mourning clothes at the decease of relatives. There is no evidence from the earliest history of that time that there was any manufacturing company formed in 1638 to furnish the inhabitants with woollen goods. Both woollen and linen cloths, if not imported, were made by the hand-labour of females of the different families. These spun and wove for their own use. Even in the first years of the present century, that marked the period of his own memory, every particle of cloth, both woollen and linen, to clothe the children and others of the household, was made under its roof. The first manufacture of satin cloth in the towns of Tolland and Vernon by hand-looms, from warp then introduced, by machinery from water-power, was as familiar in his memory as the extremes in the weather and different seasons during the last two years.

A new industry—that of spinning woollen warps—has been established in Hartford, Conn. At present the business is being done at 336, Asylum-street, under the name of the Hartford

Warp Company, but only one machine is being operated now.

Charles Topham, of Salem, has been in Providence recently with samples, yarns and cloth, made from the ramie plant. Samples of suitings from ramie have been woven on looms at one of the Olneyville mills, and those of dress goods at the woollen mill of Robert Blakey at Hyde Park. A test of the relative strength of ramie and worsted yarns made on a testing machine at the Atlantic Mills, Olneyville, showed that the worsted broke at 85, while the ramie ran up to the highest figure, 105, and did not break. There is at present a duty of 15 per cent., but the McKinley Bill places it on the free list. The first attempt to make yarns was under Superintendent Spaulding, of the Ray Woollen Mills, at Franklin, Mass.

Messrs. J. J. Wyson and Co., of Glauchau, Saxony, are about to commence the manufacture of dress goods at Paisale, N.J., under the style of the Botany Worsted Mills. The capital is £350,000.

The native linen thread is still the subject of active inquiry and keen discussion. Mr. W. A. Ingram, formerly an employe of the York-street Flax Spinning Company, will assume charge of a new concern for the production of linen, which is about to be established at Sioux Falls, South Dakota. Mr. Ingram is an enthusiast, and says he does not see why St. Paul or Minneapolis should not have a second York-street Company.

The imports of Foreign Dry Goods into the port of New York for the week ending July 31st, 1890, and since January 1st for the last three years, were as follows:

	1888.	1889.	1890.
Entered at port . . .	2,850,316	2,881,954	3,572,611
Thrown upon market	2,740,270	2,890,317	3,728,861
Ent'd. for'ns mpt'g'd	2,276,388	2,261,593	2,761,599

	1888.	1889.	1890.
Imports of dry goods since January 1st.			
Entered at port	78,459,234	81,732,949	92,937,831
Thrown on m'k't	77,139,458	81,636,668	91,131,942

COTTON-GROWING OUT OF SEASON IN BOMBAY.

(FROM OUR OWN CORRESPONDENT.)

BOMBAY, July 25th, 1890.

In regard to the genera of the cotton plant botanical research has perhaps accomplished less than in connection with any form of growth. Its species are reckoned by some botanists to be about fifty in number, while others again are satisfied with including them under three or four. The mechanical structure of the fibre during its development is also, in great measure, a matter of supposition and doubt, and will probably remain so for some time. Those who know anything about the plant are aware that it varies greatly under the influences of different soils, seeds, climates, and methods of cultivation. The Sea Island seeds produce the finest cottons in the world, on the islands round the coast of Florida and Georgia. There the climate is moderate and equable, and the soil consists of a light, sandy, alluvial deposit with a mixture of saline matter, while an efficient system of irrigation and drainage is kept up. India, from the commercial aspect, produces the worst class of cotton, due to inferior seed, to the strict division of her dry and wet seasons, and to doubtful systems of cultivation. From experiments, it has been found that Sea Island seed grown in India depends greatly in the quality of its produce, while the opposite result takes place when the Indian seed is sown in America. This, then, proves that the influence of the seed is, in a great measure, affected by the soil and climate; or, in other words, that if the seed of one country be taken to another, and its product of seed replanted from year to year, its cotton will ultimately assume the characteristics and qualities of the cotton indigenous to the district. Climate has, perhaps, the greatest influence; then follows the soil, the methods of cultivation, and seed.

In cotton growing, however, as well as in all other forms of agriculture, the chief point to be considered is the season. Every country has a season of its own, and plants grown out of sea-

son show different results in their development (if they develop at all), and yield a produce different in many characteristics from those raised at the proper time. The study is an interesting one, and worthy of greater scope than it is in my power to give to it in the present letter, but I may deal further with it at some future time. The experiments upon which I have based the following matter were carried out in Bombay, where the proper season for planting is just before the monsoon breaks in June, and the usual reaping season is in November.

(1.) The first experiment was made with seed from Gallini Egyptian cotton (*Gossypium Barbudense*). It was sown in November, 1887, after the monsoon had ended and when the cool weather commenced. The soil being then still somewhat moist, the young plants soon presented themselves, but their growth was exceedingly slow. Just sufficient watering was given to them to prevent them from dying out, and the leaves, branches, and stalks were consequently dry and small. As the hot weather began to set in, the blossom stalks were thrown



MAGNIFIED 400 DIAMETERS.

out; and in May of the present year (which is the hottest month) pods were formed, their size being about that of a walnut. At this time none of the plants exceeded one foot in height, or, say, one-fifth their natural size, and yet several of them had from six to nine pods. Owing, however, to the deficiency of the natural fluids, they did not open when maturity was reached. The sections of the capsule held firmly together, and had to be opened by hand. They were three-celled, and divided by ribs into six compartments, as in ordinary *Gossypium Barbudense* plants. Each compartment contained three seeds, enveloped amongst the plexus of fibre, the proportion of weight of the former to the latter being on the average as 25 to 9. The top leaves of the plants were three- and five-lobed. Under the microscope the fibres appeared dense, with thick, heavy walls clearly defined. The twists were long but uniform, and considerably coarser than the original Gallini fibre. The colour was also whiter, and the strength and tenacity greater. The mean length of the fibre was about 1½ in. The microscopic appearance was as shown at A, while that at B represents the undeveloped fibres, of which a considerable quantity was apparent. The latter were almost entirely without twist, semi-transparent, with outer walls, which were thick and dense.

After this examination, some of the pods were left on the plants until the rainy season had fully set in (about the end of June), when a second examination showed that the decomposition had set in amongst them. The fibres had also degenerated in length and about 50 per cent. in strength, while under the microscope the change was even more apparent. The twisted

fibres had in a great measure lost their convolutions, and appeared darker and heavier owing to the absorption of the moisture.

(2.) The second experiment was on Indian cotton seed (*Gossypium Herbaceum*), which was sown in April, 1889, and yielded pods and cotton about the month of October. Instead, however, of removing the plants they were allowed to grow until June of this year, and had then attained a height of six feet. During the whole time they continued to propagate fibre, which, however, month by month gradually declined in value. At the present time the staple varies from ½ in. to 1 inch in length, and is much weaker than the standard. Under the microscope the structure is fluid-like and almost transparent, and is irregular in the length and number of its natural convolutions.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Ashton.

Most of the spinning firms stopped on yesterday morning to Thursday morning next for the Wakes holidays. We learn, however, that several large manufacturing firms are ceasing work for a whole week. The latter arrangement is regarded as a sign that manufacturing in this district is not very flourishing at the present time. During this week a large amount of money has been paid to the members of savings clubs at the different mills and public-houses where such clubs exist.

Accrington.

On Wednesday morning all the mills re-started work, having been stopped since Thursday week for the holidays.

The new shed on Spring Hill Estate, to hold 1,000 looms, is expected to be ready for machinery by next month, and it is stated it will be worked by Messrs. Bury Brothers, of Manchester.

Atherton.

It is rumoured that a new mill is about to be erected at Atherton by the Albion Spinning Company in Bag-lane, on the site of the one which was burned down in December of last year.

Bury.

Messrs. J. K. Schofield and Company are about to put some new ring frames in their Clarendon-street cotton mills, Freetown. The frames have already been ordered, and an early delivery promised.

Since obtaining the sanction of the shareholders to proceed with the new mill, the directors of the Peel Spinning Company have not been idle. The work of getting out the particulars of the contracts has been pushed forward with the least possible delay, and as a result several of the contracts have been let, including that for building, which has been secured by the Mayor of Bury, Mr. Charles Brierley, builder and contractor, Fishpool. Mr. Brierley has already got a considerable quantity of working plant on the site of the mill, and every effort will be made to get as much as possible done before the winter sets in. This portion of the work will be in full swing before this week is out. The only large contracts remaining to be let are those of the engines and the machinery, and these are expected to be settled in the course of a short time. On Thursday evening week an interesting event transpired in connection with the building of the new mill, viz., the cutting of the first sod. The new mill will be much larger than the present one, and is to be capable of holding 100,000 spindles. It will only be four storeys high, so that it will cover considerably more ground than the present structure does. When full the company will have about 170,000 spindles running. Since writing the above we have been informed that Messrs. Platt Bros. and Co., Limited, Oldham, have been awarded the contracts for supplying all the machinery.

Bacup.

Mr. John Hargreaves is building a new loading shed and making extensive alterations at his Tong-bridge reed and head works.

Blackburn.

A cotton waste breaker, employed at Mr. C. A. Shorrocks's mill, in Chapel-street, was attending to some machinery there, when his arm was caught between two rollers, and seriously crushed.

At the Blackburn County Court, Joseph Andrew Ainsworth, formerly a cotton manufacturer, of

Stanhill Mill, Oswaldtwistle, applied for his discharge from bankruptcy. The Official Receiver stated that the liabilities were said to be £3,949, but were found to be £3,944. Assets were put down at £1,537, but realised £1,160, there being a dividend of 2s. 7½d. in the pound. The bankrupt was formerly a cloth salesman, and his salary was £225 per annum. He had saved £240, and in March, 1887, he commenced business with £600, and after a year and ten months the actual deficiency on realisation was £2,838 Os. 7d. Mr. Sandeman, of Accrington, who represented the bankrupt, urged that the failure was due to starting business with too small a capital; and that the bankrupt, when he first knew of his insolvency, had thought by continuing to get over his difficulties. His Honour remarked that that was a case in which a man entered into a business without sufficient capital, and had every possible reason to know soon after that he was carrying on a losing business. In any case, he must have been certain that he was insolvent after the first ten months, and yet he carried the business on. Taking all the facts into consideration he should suspend the bankrupt's discharge for three years.—George Warburton, John Hardman, and Richard Warburton, formerly trading as Warburton Bros., cotton manufacturers, at School-street Mill, applied for their discharge from bankruptcy. The Official Receiver said the liabilities of the joint estates amounted to £525 13s. 7d., and actual proofs £9 10s. 3d. only. All the joint sums of the bankrupts were swept away by a distraint for rent which had been levied prior to the failure. The debtors alleged that they first became bankrupt ten weeks before the petition was filed. His Honour said three men started with £600, and carried on business at a loss. At some particular part they "held their own," and made a small profit. They went on, hoping to retrieve themselves, and hoped too much. People had no business to hope so much under such circumstances. There might have been a *bona fide* belief that they would retrieve their position, but he must suspend their discharge for a year.

Burnley.

A well-attended meeting of manufacturers and other employers of labour was held on Wednesday night in the Mechanics' Institution, for the purpose of considering an application from the operatives' holiday's committee for an additional holiday in September. After a discussion of some length, it was resolved:—(1) "That two days' additional holiday be granted for the present year, on condition that in future the Burnley Fair Holiday be amalgamated to the September Holiday, and fixed for dates to be mutually agreed upon between the two committees; and (2) that the holiday for the present year be fixed for the 6th and 8th of September." If the conditions of the manufacturers are accepted to, it will be seen that the holidays at Burnley Fair will in future years be abolished, and a holiday of about a week's duration substituted in September.

Crompton.

We learn that the mills in this district are loyally adhering to a full week's stoppage, as arranged between the Masters' and Operatives' Associations. Notices have been posted notifying a stoppage from last night until the Monday but one following. The firm, however, of Messrs. A. and A. Crompton and Company, Limited, hard twist manufacturers, Park and Woodend Mills, Shaw, stop from yesterday evening until Wednesday morning. At several mills extensive repairs will be made. The Moorfield Spinning Company are putting in a new fly-wheel and pinion wheel, with steel rims, and a new fly-wheel will replace the old one at Oak Mills, Shaw.

Colne.

We learn that Messrs. Haslam Brothers, manufacturers, Spring Gardens Mill, who also run the Yatefield Mill, Burnley, have presented a cheque for £200 to the Victoria Hospital, Burnley.

Farnworth.

Mr. Eli Dyson is building a handsome tower in preparation for sprinklers at his Victoria Mill. The order is not yet given, nor is it decided which to use. For the new portion of the same mill Mr. S. Brooks is supplying the Ring Frames, Messrs. Lord the Opener, and Messrs. Platt, Bros. and Co. the Finishing Scutcher.

The creelers and cross-piecers at Messrs. Lee's struck work, but have returned. About 30 lads employed by Messrs. Cooke, spindle and fly makers, struck for an advance of 1s. per week, but most of their places were soon filled by other youths, as the firm could not concede their demands, the wages paid being equal to that at other places.

During the past fortnight Farnworth has been the scene of quite a series of minor strikes and lock-outs, which in one or two cases, at one time, began to assume a serious aspect. Messrs. Barnes and

Co.'s four mills, Messrs. W. and J. Almond, Eli Dyson, Thomas Nuttall and Sons, and Simeon Dyson and Co., were amongst those affected, the two latter the most seriously. The outbreak was chiefly confined to the doffers and piecers, who left work on strike for more wages. In most cases, however, no request had been made or notice given of the intention. Most of the strikers have now returned to work on the old terms, after having succeeded in closing the mills for a few days.

Halifax.

In connection with the Brussels weaving department at Dean Clough Mills, a singular turn-out has taken place this week. The creelers on Tuesday last, taking umbrage at the fact that a new weaver had been started, instead of the vacancy being given to a creeler, struck work. Beyond the fact that the absence of the lads greatly retarded the progress of the weavers with their work not much inconvenience was caused by the strike. On Thursday the dispute was amicably arranged, and the strikers resumed work this morning.

Leigh.

Sprinklers are being erected in the Avenue Cotton Spinning Mill, belonging to Mr. William Guest.

London.

The directors of John Howell and Co., Limited, have declared an interim dividend at the rate of 10 per cent. per annum for the half-year ending July 19th, payable on the 5th inst.

Manchester.

A well attended meeting of cotton waste spinners and manufacturers was held on Tuesday at the Bull's Head Hotel, Market-place, Mr. Eli Higham (Accrington) presiding. It was unanimously resolved at once to work short time for a fortnight in the trade.

At the Manchester County Court, on Monday, before Mr. Registrar Lister, the public examination was conducted of John Corrigan, machinist, Bridgewater Works, Rodney-street, Oldham-road, Manchester, against whom a receiving order was made in the Manchester Court on the 20th of June last. In reply to Mr. C. J. Dibb, the official receiver, the debtor stated that his gross liabilities amounted to £1,718 15s. 3d., of which £1,698 Os. 3d. was expected to rank for dividend. He computed his assets to realise £613 11s. 6d., leaving a deficiency of £1,084 8s. 10d. to be accounted for. In October, 1887, he took a room in the Brownsfield Mill, Ancoats, and early in 1889 removed to his present address, where he commenced machine making. On January 11th, 1890, he entered into an agreement to sell the works, patents, etc., to a company, who were to pay off all his liabilities and give him £500 in shares. The agreement was to be completed by the 10th of May, 1890, but the company failed to complete it. They had, however, carried on the business in the meantime, and had collected debts owing to him. There was never any allotment of shares, and on May 12th he served notice on the company to rescind the agreement. He alleged as the causes of his failure want of capital and the mismanagement of the works by the company. The examination was adjourned.

At the Manchester County Court on Monday, the public examination was conducted before Mr. Registrar Lister of Ralph Goldseller, indiarubber and brattice cloth manufacturer, trading under the style of "The Star Rubber and Brattice Cloth Company," Bridge Mills, Rochdale-road, Manchester, against whom a receiving order was made on October 2, 1889, on a creditor's petition. In reply to Mr. C. J. Dibb, the Official Receiver, the debtor said he alleged as the cause of his failure a fire which took place on his premises on May 14th, 1889. He came to England about six years ago, and for some time carried on a furnishing business at Shakespere-street, Southport. He was afterwards persuaded by his friends to go into the business of manufacturing brattice cloth, tarpaulins, and water-proofs, and for that purpose he took the Bridge Mills. The statement of affairs, which he scheduled in October last, disclosed liabilities £6,097 6s. 3d. expected to rank for dividend, and assets amounting to £4,826 12s., leaving £1,270 14s. 3d. to be explained. He stated that the fire which took place on his premises was primarily responsible for his insolvency. He had indirectly heard that arson had been suspected, but no allegation of that kind had been made direct to him. The examination was adjourned.

On Saturday evening, at the Queen's Hotel, a presentation took place to Mr. William Carnelley, who has just completed 50 years' service with the firm of Messrs. Rylands and Sons, Limited. Mr. Carnelley's co-directors, anxious to show their regard and affection for him, commissioned Messrs. Elkington and Co., Limited, to supply a massive silver dessert service, consisting of the following articles:—A handsome centre-piece, richly chased; two end-

pieces to suit; a plateau of artistic style, on which the centre-piece and end-pieces are arranged; two large oval side-pieces, also to match; a beautiful bowl, lined inside with gold, and richly ornamented in pure Greek style, and a pair of elegant jugs to match. The whole is a fine example of silver-smiths' art, being from a special design of Messrs. Elkington and Co.'s. On the centre-piece and bowl the following is inscribed:—"Presented to William Carnelley, Esq., by his co-directors, as a token of regard and affection on the occasion of his completing 50 years' faithful service in connection with Rylands and Sons, Limited. July 23rd, 1890." The other pieces bear the monogram of the recipient. The buyers, managers, travellers, salesmen, and other employees of the firm, also wished to testify their esteem to Mr. Carnelley, have presented the following in silver to him:—A beautifully chased epergne or candelabrum, representing the vine; a plateau to suit; a richly-gilt and oxidised dish, containing representations of the seasons, enclosed in a suitable frame, with gilt and oxidised mouldings to match; a cake basket and biscuit box, chased in the best manner. A suitable inscription is engraved on the principal pieces. Mrs. Carnelley is also to receive as a memento a valuable diamond bracelet and pendant.

Nelson.

The annual holidays commenced here on Thursday (week) night, and continued until Wednesday night, being two days longer than in former years. The exodus of holiday-makers began shortly after the stoppage of the mills, and between that time and nine o'clock the morning after 8,000 people had left the town. Blackpool, Southport, and the Isle of Man were the most popular places of resort.

Oldham.

Sprinklers are being placed in the Springhead Spinning Company's mill.

The Royton wakes were held last week, when the mills were closed for seven days.

Mr. Whitehead, son of ex-Councillor John Whitehead, is going out to South Africa to fill an engagement in connection with a firm of merchants.

Mr. Albert Wilson, who was employed as a mule overlooker at Glebe Mills, has left this position to take up a situation in Blackburn.

Work was resumed at Newtown Mills, Shaw, on Monday morning, after a week's stoppage for repairs.

Messrs. Platt, Brothers, and Co., Limited, are supplying machinery to the following firms:—Twiners, Victoria Mills, Lees; mules, Lees Union Mill Company; and mules and carding engines, Springhead Spinning Company.

Mr. J. W. Hanson, carder, of the Duke Spinning Company, has made an engagement with the firm of Messrs. Morajee Goolidass and Co., Bombay, to go out and act as their card master. Mr. Henry Hopkinson, formerly of Shaw, is also going as spinning master for the same firm.

Plans have been approved for an extension of the mill premises belonging to the Gladstone Spinning Company. It is intended to lengthen No. 6 mill several bays, by which longer mules can be obtained, thus increasing the number of spindles by a few thousand. Additional carding machinery will also be required.

Good progress has been made with the extensions at the Broadway Spinning Company's mill. The roof is now on, and the internal arrangements are being proceeded with. The extension consists of a shed, in which cardroom machinery will be placed, so as to allow of mules being placed in other parts of the premises.

The returns of the May examinations of the City and Guilds of London Institute in cotton manufacture, of the students attending the classes in connection with the Oldham Equitable Co-operative Society, show that there were five passes in second class honours grade, and seven first and ten second class ordinary. In mechanical engineering one student passed second class in ordinary grade.

We understand Messrs. Tetlow Brothers, of Holinwood, are supplying the boilers required by the Eagle Mill Company, in connection with the alterations which are being carried out at the new premises they have taken over at Lower Place, Rochdale. The machinery consists of six steel boilers, 30ft. by 8ft., to carry 150 lbs. to 160 lbs. pressure. The engines now in use are to be altered to triple-expansion, with a driving power of 1,300 horse.

Messrs. Buckley and Taylor, Oldham, are supplying the steam engines for the Elm Mill Company; iron-founders' work is being supplied by Messrs. John Hall and Sons, Oldham; the mill gearing and shafting by Messrs. Wm. Whittaker and Sons, King-treat, Oldham; and the boilers by Messrs. Tetlow

Brothers. Messrs. S. J. Smethurst, of Oldham, are the contractors for the mill buildings, which are expected to be ready for roofing at Christmas. The mill has now reached the second floor.

At a largely-attended meeting of the Werneth Spinning Company, held on Tuesday evening, it was resolved to erect additional premises capable of holding 40,000 mule spindles. The company has now close upon 100,000 spindles. In the discussion on the project some very severe strictures were passed on mill building at the present time, which was considered most inopportune, both as regards the state of trade and the cost of materials. It was also contended by men of experience that 100,000 spindles were sufficient for one person to control successfully.

The Lancashire Spinning Company has at last been dissolved, after being in liquidation since October, 1885. In December, 1887, a dividend of 13s. 4d. in the pound was paid to the creditors of the company. It was intended, on the part of the liquidator, to pay a further dividend of 6s. 8d. in the pound, but before he could do so the solicitors to the second mortgage applied to the High Court for a motion to restrain him until their claim was satisfied. On the hearing of the motion, the Court ordered that the balance in hand should be passed over to the second mortgagees in part payment of their claim. Further delay, it seems, occurred through the estate of the late Mr. Robert Whitaker, of Boyton, being placed in Chancery, the estate being indebted to the company to a considerable amount for calls made since liquidation proceedings were instituted. However, the estate has been dealt with, and all the calls and demands due to the company paid, thus enabling the liquidator (Mr. James Dawson, of Oldham) to apply for the dissolution. The mills at Heyside, near Oldham, which were taken over by the Lancashire Spinning Company were formerly owned and worked by Mr. Richard Fitton. They are now in the possession of the Empire Spinning Company. The Lancashire, which had a most eventful career, was floated in London, and comparatively possessed few shareholders in Oldham, the share capital being subscribed in other districts. It was floated during the Oldham company mania of 1873-4, being registered on May 18, 1874, with a share capital of about £115,000.

Preston.

The workpeople at Messrs. G. and R. Dewhurst's two mills at Moon's mill and Curden, many of whom were accompanied by their wives, had a trip to Liverpool and Blackpool respectively, on Saturday, through the generosity of their employers, in commemoration of Mr. Harry Dewhurst's wedding. The workpeople at Messrs. Simpson and Russell's Gregson-lane, Higher Walton, had a trip to Blackpool in wagonettes on Saturday also.

Pudsey.

On Wednesday morning, at the Wesleyan Chapel, the marriage of Miss Stillings, elder daughter of Mr. James Stillings, of the firm of Messrs. Scales and Sons, Grove Works, to Walter, only son of Mr. William C. Forrest, of the firm of Messrs. W. C. Forrest and Co., Prospect Mills, was celebrated. The presents, some of which were very costly, numbered over 100, and included a handsome dessert service from the workpeople of Messrs. Scales and Sons, Grove Works, and three volumes of music from the Leeds warehousemen, also a valuable brass clock and ornaments to match, from the employes of Messrs. W. C. Forrest and Co.

Rochdale.

Messrs. Pollitt and Wiggall, of Sowerby Bridge, have been commissioned to supply the steam engines required by the Eagle Mill Company.

Radcliffe.

Mr. J. C. Hamer, of Hope Mill, has extended his weaving shed, which is now capable of holding 130 looms. The holiday time in this district is still unsettled. Several of the mills are stopping this week end, whilst others are running until the end of the month, or the first week end in September.

Rawtenstall.

A number of mills in this district are running short time owing to the difficulty of getting orders and the high price of cotton.

The Rawtenstall Cotton Spinning and Manufacturing Company are about to fit up their Irwell Mill with the Grinnell Sprinkler, and at their Union Mill they have placed an order with Messrs. Ashworth, Eros, Manchester, for a number of their patent flat cards.

A movement is on foot for the reconstruction of the Newchurch Spinning and Weaving Co., who have 55,000 spindles and 1,200 looms. Some years ago the Company issued preference shares, but it now appears that owing to a flaw in the articles of

Association, the Company have no power to issue such shares. It is, therefore, proposed to wind up the concern with a view to remedying the above defect, and at the same time to liquidate the adverse balance by reducing the nominal value of both Ordinary and Preference shares from £10 to £7 10s., thereby materially improving the financial position of the Company.

Stalybridge.

The looms in the shed formerly belonging to the Crookbottom Manufacturing Company are now in full working order, with the exception of 600, which were sold out, the space now being occupied by a number of ring frames. These are being got to work very well considering the peculiar temperature of the weaving shed. We believe the proprietors of the shed hail from Oldham, and the energy they have shown in keeping the looms at work makes a strong contrast when compared with the efforts formerly put forth by Stalybridge people to make the concern a success. The cloth now being made by this firm is a good class of printers, and the material or yarn is of excellent quality for the purpose to which it is applied.

Stockport.

Early on Saturday morning a fire broke out at the cotton doubling mills of T. and J. Smith, Thomas-street, Higher Hillgate. The upper portion of the mill was burnt out, but happily no persons were injured.

Tyldesley.

The annual August holidays at the mills commenced yesterday, when all the mills closed until Tuesday morning.

On Thursday of last week all the spinners employed at the five mills of Messrs. James Burton and Sons, gave 14 days' notice on account of alleged bad material. The following day (Friday) the masters caused 14 days' notice to be given to all hands who work other than at mules.

Walkden.

A dispute, which has resulted in the discharge of the loom jobbers, has taken place at Messrs. Burgess and Ledward's mill. As the firm had a total nearly equal to three sets of looms standing idle, they requested that two out of the eleven jobbers should play a week in their turn, in preference to two men being discharged. On the looms being divided, however, although each had from nine to sixteen looms standing out of his set, they refused to take charge of the five or six others, hence their discharge as above. All the places, with two exceptions, were filled within a week of the men leaving work on the 6th inst. The men's action is considered most foolish throughout the district. We understand excellent wages have been earned by them.

Yeadon.

At the monthly meeting of the Yeadon and Guiseley Chamber of Commerce, on Monday, Mr. Jonathan Peate in the chair, Mr. Wm. Coupland referred to the stoppage of the work of the construction of the new railway from Guiseley to Yeadon, and asked if the Chamber could do anything to assist the company to complete the line. Mr. J. M. Barwick (the chairman of the railway company) said the reason why the construction of the line had been stopped was because the Yeadon people had failed to find the necessary capital. He had worked three days a week for the last six months for this railway, and it was very distressing that no one assisted in anything like the same proportion. As they knew, the contractors agreed to complete the line if the company would find the money to purchase the land, but the latter had failed to do so, and consequently the contractors had said they were obliged to stop the works. He did not think the present stoppage would be any disadvantage to the company, if only sufficient money could be got with which to purchase the land; as there were some owners, he was sorry to say, who would not let them have possession until the money was paid. He thought that about £3,000 would enable them to go on again. They had been struggling all this time to keep independent of the Midland Railway Company. They had also the intention of carrying the line forward to join the North-Eastern line at Horsforth, thus making a through line to Leeds, and it would be a pity to let the line fall into the hands of the Midland Company, as he was afraid that it would then be never anything more than a siding. The Chairman remarked that when the company applied for power to make the extension to Horsforth, the Parliamentary Committee would have granted the power asked for had it not been for an agreement entered into with the Midland Company that no extension should be asked for until the present line was completed. That was the only thing which stopped the extension. He thought the manufacturers of Yeadon ought to give the scheme more support. He suggested that a meeting of the manufacturers should be called to

consider the matter. It was decided accordingly to hold a special meeting.

SCOTLAND.

Dundee.

On Wednesday, at the Harbour Trustees' Trip, Mr. James Watson, replying to the toast of "The Harbour Officials," mentioned some interesting facts about the progress of Dundee. In 1845, 30,140 tons of flax, hemp, and tow were imported into Dundee; this year there had been 35,725 tons imported. As to the jute trade, in 1845 there were imported into Dundee, 9,298 tons of jute, while this year there had been landed at the docks 206,753 tons, or fully 22 times the quantity imported 45 years ago.

A squad of engineers from Lilybank Engine Works lately accomplished a feat in engineering which is deserving of special notice. At Wallace Craigie Works (Messrs. Wm. Halley and Sons), in six working days, they removed a pair of horizontal compound engines of an obsolete type and put down a pair of Corliss engines of the most modern construction, the diameter of the cylinders being 22 in. and 40 in. Both cylinders are fitted with Corliss valves in a manner conducive to economy in working—the "cut off" arrangement on the high-pressure cylinder being controlled by the governor. These engines were designed and made at Lilybank Engine Works. Although working up to 400-horse power since they were started, there have been no tantalising stoppages from heated bearings or derangement of working parts—the best possible guarantee of efficient workmanship.

Dunfermline.

The death of ex-Councillor David Hood, was announced on Monday. Mr. Hood was 85 years of age, and was a member of Dunfermline Town Council for 18 years. He fulfilled the duties of Dean of Guild for a considerable time during his term of office in the Council. Mr. Hood began life as a weaver in Dunfermline, and rose to the position of a pretty large employer of labour in the palmy days of the handloom linen weaving trade in Dunfermline.

Paisley.

The fund being raised for the erection of a statue of Sir Peter Coats now amounts to £2,130.

Vale of Leven.

On Monday night, about nine o'clock, fire broke out in the extensive calico printing works of Messrs. James Black and Co., Dalmonach, Benhill. The fire originated in the blanket-drying stove and threatened to attack several heavily-stocked white cloth warehouses, as also the printing shop adjacent; but a plentiful supply of water and valuable help from numerous willing workers quickly got the flames under, and prevented what might have been a serious calamity. Very considerable damage has been done to plant and cloth. It may be mentioned that no fire has occurred in these works for about thirty years.

IRELAND.

Belfast.

On Saturday, the employes of Messrs. Phillip Johnson, and Sons, Limited, Jennymount Mills, numbering about 1,000, belonging to the various departments of the mill, enjoyed an excursion to Massereene Park, through the kindness and liberality of Mr. S. A. Johnston, J.P., their employer. There was great evidence of the esteem felt by the workpeople for their employer.

Newry.

A woman employed at a spinning mill belonging to the Besbrook Spinning Company, met with a shocking death on Friday week. Deceased was cleaning under a carding machine, when the revolving cards caught her, and pulled away one side of her head and face. Death was instantaneous. Portions of the head and face were found embedded in the machine, and the body was otherwise shockingly mutilated.

In order to counteract the effect of the McKinley Bill, several German cloth manufacturers of Greis, Gera, Chemnitz, and Leipzig have combined to purchase a factory in the neighbourhood of New York. They will probably commence work in the autumn. There is now being shown at the Tokyo Exhibition a quantity of cloths, serges, flannels, and shawls woven by the Keito Boshoku Kwaisha (Tokyo Spinning and Weaving Company) at Oji, Tokyo. This concern has been weaving cloths since March, and though it cannot be said they are yet quite satisfactory, the company have hopes that before long they will be able to produce material equal in quality to that imported from abroad.

Miscellaneous.

ANCIENT TEXTILES AT THE WHITWORTH INSTITUTE, WHITWORTH PARK, MANCHESTER.

The Whitworth Institute, Whitworth Park, was opened to the public on Monday last, and in relation to the ancient textiles from Sir Charles Robinson's collection which are on exhibition therein Sir Joseph Lee forwards to the *Manchester Examiner* the following article upon them which he states is written by one whose knowledge of the subject is probably unrivalled.

Although altogether eclipsed in richness and splendour by the magnificent textiles and embroideries of the 15th and 16th centuries, in Sir Charles Robinson's collection, there is perhaps nothing in this unique gathering more really interesting than the series of specimens of ancient Græco-Roman and Egyptian textiles which have recently been found in Upper Egypt, and which Sir Charles has been fortunate enough to secure. Until now the scant notices and descriptions in ancient authors were all the evidences remaining as to the perfection to which the decorative textile arts had been carried in the ages of classical antiquity. Solomon arrayed in all his glory, Cleopatra clad in rich silks and gold, Persian satraps, and Byzantine emperors loom before our imagination as figures of almost inconceivable richness and splendour, but of all the myriad rich garments and wonderful tissues not a thread had seemed to have escaped the all-devouring tooth of time. An entire passage of the world's activity seemed to have been blotted out for ever. How could it be that frail silk, linen, and woollen fabrics should be preserved for centuries, or thousands of years even? In itself the idea seemed absurd. Pottery and objects in perennial bronze we have of all dates and periods, from the remotest epochs even; but textiles—the garments of the rich, and when discarded usually worn to the last thread by the poor—how should they be preserved? How should they escape the moth that corrupts, or the mildew and decaying damp of ages? There was but one likely means—the protecting shelter of the grave, and at last the grave has yielded up a rich harvest, even in this unlooked-for direction. The custom of burying works of art, implements, and utensils, and other things with the dead has been the chief—indeed almost the only—means of preserving to the modern world many of the varied forms of ancient classical art. Indeed, the only few and rare specimens of ancient textiles preserved in cathedral treasuries and Continental museums, none of which went back further than the 7th and 8th centuries of our era, were mostly discovered in the tombs of bishops and abbots, and formed part of the liturgical vestments in which they were interred; but even the most interesting of these very rare specimens gave us little, if any, notion of what textile design in the Pagan and early Christian times was like. Doubtless that art was of unexampled beauty and perfection, but to the modern world it was dead; it had left no more light and record than had the fitting sunbeams of those ancient hours. All at once, nevertheless, a flood of light has been let in upon us, in this unlooked-for direction, and apparently it is destined to be an unique revelation; hence its supreme importance. Egypt, that wonderful ancient country, the marvels of which are, indeed, only now beginning to be fully elucidated, has been the great old conservative to whom we owe this revelation. The custom of mummifying the dead, and the extreme dryness of the Egyptian climate, worked together in the preservation of innumerable things, which irretrievably perished under other *regimes* and in other climates; but although Egyptian mummies, swathed in unnumbered yards of linen and enclosed in elaborately painted coffins, have been found by thousands, and are familiar to everybody, there was a distressing sameness and monotony about these things.

Hieroglyphs and scarabs in bewildering abundance there were, but of really beautiful ornamentation there was little or none. A strict and rigid hierarchic formalism, forbidding all departure from established rules, seems to have reigned in this matter during untold centuries in Egypt; and although if amongst the endless mummy bandages they had ever put specimens of the figured silks and tissues they undoubtedly manufactured, they would have come to us as fresh and perfect as the day they left the looms, not a scrap of any such fabrics had ever, until the occurrence of an extraordinary discovery two or three years ago, been seen. At

what exact time the ancient Egyptian religion finally died out is not quite clear. The Pagan creeds and philosophic *regimes* of Greece and Rome reigned side by side with the old religion in Egypt for centuries even before the advent of Christianity; the population was greatly mixed and divided, some cities and districts remaining strictly Egyptian, others entirely Greek, and others had adopted Græco-Roman customs and beliefs. To all appearance, Christianity took an earlier and stronger hold on the purely Egyptian and Coptic race than on the Greeks even, though the scholiasts and philosophers of the latter people in Egypt soon became its most ardent disciples. In any case, it is the fact that during the first and second centuries the doctrines of Christ took firmer hold in Egypt than perhaps in any other part of the known world. It is difficult to realise the nevertheless certain fact, that some of the people who in their lifetime wore the textile specimens now exhibited at the Whitworth Park Museum may possibly have stood face to face with the first disciples and apostles even of our Saviour.

It would have been supposed that so profound a revolution as that from the unchangeable Egyptian creed of unknown antiquity to that of Christianity would have put a sudden end to the one most characteristic custom which prevailed under that creed—that of mummifying the dead. Very probably it did in most parts of Egypt, but the recent discovery in question shows that in some places at least the old national custom survived during the Christian period, and lasted even down almost to mediæval times. There is a town in Upper Egypt situated under high cliffs near the cataracts of the Nile, now called Akhmim, which in ancient days bore the Greek name of Panopolis. In 1896 and 1897 the cemetery of this town was brought to light, and from it were exhumed some hundreds of coffins, still intact in the dry soil, containing mummied corpses; and the extraordinary fact is that these mummies had evidently been interred in the dresses they wore in life, literally decked out in their best clothes, and these clothes in many cases were preserved in a most wonderful manner. All at once a vast and varied treasure of antique textile art was revealed in these tattered robes. Of course it was imagined that this was but the beginning of a series of similar discoveries, and that an entirely new era of antique discovery had dawned. But it soon became obvious that it was but an isolated and perhaps, indeed, unique example for, although many other cemeteries have since been examined, no similar treasures have been found, and the inference as yet is that no such custom prevailed elsewhere. It was at all events a bright inspiration which prompted these old Panopolitanians to adopt this original course of procedure. Not only did they dress their dead in their best, but they interred them with all their ornaments, jewellery, etc., and even with the implements of their trades and professions: the weaver with his shuttle, the writer with his pen and ink-horn, the carpenter and his man with their tools, etc., and the children with their dolls and playthings. The principal article of dress, and that on which the chief ornamentation was bestowed, was the tunic. This fashion of vestment has in a modified form survived even to our own day, and has its representative in the herald's tabard and in the dalmatica worn by deacons in the Roman Catholic Church. Several splendid examples of this last-named vestment may be seen in Sir Charles Robinson's collection. It was in its shape a large square or cruciform piece of stuff, with a hole out in the centre, through which the head of the wearer was passed. When adjusted on the body, the side pieces of the cross-shaped stuff fall over the shoulders and arms of the wearer, and form open sleeves. It will be noted that the beautiful mediæval dalmaticas alluded to have splendid embroidered cuffs or borders, and square embroidered compartments at the lower part of each side; these are called the "orphreys." These ornaments then have their prototypes in the ancient Egyptian examples now in question. The orphreys in these last were, however, very often circular, and they were then called "orbiculas." Others, however, are square, and the many beautiful specimens cut from the Akhmim tunics exhibited at Whitworth Park may be directly compared with the numerous other gorgeous Spanish and Italian detached orphreys of which they were the precursors. The long borders or bands, and the curious "clocks" which have some resemblance to the embroidered side ornaments of modern silk stockings, were in like manner cut from different parts of these ancient tunics. In almost every instance portions of the robes when found were utterly perished and decayed, whilst others remained in the most surprising state of preservation, the colours of the dyes in many cases being absolutely as brilliant and powerful as at first. The discoverers of the Akhmim necropolis systematically cut up the textile specimens in order to

multiply the examples for purposes of gain, and they have now all been dispersed, several of the principal European museums having been eager purchasers. The most important series were secured by Berlin, Vienna, and the South Kensington Museum. The British Museum also secured a few interesting pieces, as did Lyons and the Musée de Cluny in Paris.

Sir Charles Robinson was fortunate enough to acquire a very complete representative collection, numbering upwards of 70 specimens, about 50 of which are now on exhibition at Manchester, from one of the original Egyptian discoverers of the Akhmim treasure. From many indications it seems almost certain that the Akhmim vested mummies were those of Christians, and that it was, in fact, an early Christian cemetery, and the interments are supposed to have ranged from the first or second to the seventh century of our era. There is a correspondent diversity of style of ornamentation in the specimens; in this respect they are of surpassing interest. Whilst there is an infinite variety of motives or patterns, distinct schools of art, marking successive epochs, are perceptible. Some of the specimens are of almost pure Greek classic design; many others exhibit antique Roman motives, acanthus scrolls, wreaths, amorini, vases, &c.; others clearly indicate the influence of Lower Empire Byzantine art; whilst, finally, more barbaric Persian, Sassanian, and other Eastern styles make their appearance. On the whole, a careful study of these beautiful designs will be of the utmost importance in the illustration of the history of ornamentation, and as throwing vivid light on transitional periods from classic to mediæval styles. Nor will the textile materials—processes of production, dyes and colouring matters employed—afford a less interesting field of investigation; and here it is that our Manchester specialists have provided for them an opportunity by which it is to be hoped they will not be slow to profit. The textile materials used are very various, they comprise linen, byssus, papyrus, wool, and silk. The silk specimens are the rarest; in some instances both warp and weft are of silk; in others only the weft is silk, whilst the warp is of fine linen. Linen textiles with silk stripes woven in, also occur. Specially interesting are the woollen fabrics, doubtless of the winter tunics; those specimens in which the woollen thread stands out in a raised pile similar to fur, or carpet, or bath towels, will be of highest interest and suggestion. The greatest part of the ornamentation, however, is of fine tapestry work, executed in the high warp-loom, in the same manner as the Gobelin and other tapestry is made—panels and borders, orphreys and orbiculas, overwoven separately in this way, and then skilfully inlaid or stitched into the linen or woollen ground fabrics of the robes to be decorated. In some instances, moreover, it is obvious that the tapestry work was completed or further enriched with hand embroidery by the needle. Some of the intricate interlaced patterns, resembling Runic work, seen in the Whitworth Park specimens, are obviously out-lined with the needle and fine white thread. The dyes and colours are of extreme beauty and interest, sometimes obviously derived from substances no longer in use. Amongst these will be noted various shades of a splendid amethystine purple. There can be little doubt that this is the celebrated Tyrian purple derived from the Murex, which we read about in ancient authors, but which till now has remained unknown to us.

We repeat that a close and careful investigation of the processes and materials cannot fail to be most instructive and interesting to specialists, and they certainly will be a perfect mine of treasure to the large class of lady artist embroiderers.

THE TEXTILE INDUSTRIES OF DUNDEE.

JUTE SPINNING AND WEAVING.

Jute and flax spinning and weaving may be regarded as the staple industries of Dundee, and the former is carried on far more extensively here than in any other part of the kingdom. There is an element of romance in the story of the first introduction of jute as a fibre suitable for weaving. The plants *Corchorus capsularis* and *C. olitorius*, from which it is obtained, grow plentifully in all parts of India, and towards the close of last century the East India Company caused inquiry to be made as to whether it was capable of being used as a substitute for hemp, but the report received by them was unfavourable. In 1824 a few bales of jute were sent to Mr. Anderson, a Dundee linen manufacturer, who made numerous experiments with it, but could not produce any yarn from it of finer quality than was suitable for coarse bagging. About the same time Mr. Neish, of Dundee, obtained a small

quantity of the fibre from India, and endeavoured to induce the linen weavers in the district to spin it, but no one would attempt the task. The idea was abandoned for a time, but when Mr. Neish had another consignment of it in 1832, he once more sought to make something out of it. After repeated applications Messrs. Balfour and Meldrum, spinners, Dundee, consented to give the fibre a fair trial, and the result was encouraging. Their first attempts were made by mixing the jute with flax and tow, but in 1835 they had so far gained confidence in the new material that they were able to spin yarn of pure jute. So rapidly did its value increase that within four years its price was doubled, and thus the foundations were laid for the erection of an industry that has now reached gigantic proportions. The nature of jute and its capabilities are thus described by Mr. Warden:—"It is one of the most easily dyed fabrics known, and the colours it takes on are bright and beautiful. The common dyes are quickly applied, but they are very fugitive, and when exposed to the sun's rays soon become faint and dull. By the common process the colouring matter strikes little more than the outside of the fibre, and, as it were, paints it; and this mode of dyeing requires little material, and is done at small cost. The fibres of jute do not sub-divide so minutely as those of flax, and they are of a hard, dry nature, and to a considerable extent impervious to moisture. It therefore requires a more complex process to make the colouring materials thoroughly penetrate the fibres so as to make the dye lasting. This can, however, be accomplished, and the better class of goods made of dyed jute undergo this process, which make the colours both brighter and faster. It is hardly possible to make every colour perfectly fast, although some of them are as durable as those upon other materials. Jute is very readily brought to a very rich cream colour either in the fibre, in yarn, or in cloth. It is, however, very difficult to bring it to a full white without injuring the strength of all the fibre. . . . The slightly nature of jute, the regular, even thread which by improved machinery is formed of it, and the smooth, tidy, and clean appearance of jute cloth, are all pleasing to the eye, and therefore attractive. These qualities, combined with its cheapness, have served to recommend it to consumers, and bring it into general use. Now, instead of being used stealthily by spinners, as of old, it is the only material spun in a large proportion of the factories, and to a greater or less extent is used in every establishment in town." The difficulties in the way of bleaching and dyeing jute here referred to have been largely overcome by recent improvements in these processes.

The method adopted in the preparation of jute for the spinning-mill differs somewhat from that employed in the manufacture of linen. The raw material is brought to this country in bales weighing about 400 lbs. each, and so extensive is the demand for jute that some of the largest sailing ships afloat are employed in this trade. These bales are stored in great quantities at the jute works, and withdrawn as required. The first operation in manufacturing the fibre is "batching." One of the great obstacles which the early workers in jute had to contend with was the hard and dry nature of the fibre, which prevented it from being either spun or woven satisfactorily. To overcome this difficulty old machines were altered and new ones devised, but without effect, until the idea occurred that the jute might be made more pliable by being moistened with oil. This method was tried and found successful to a degree beyond expectation. The oil is applied in a special apartment called the batching-room, in which the jute is spread in layers, each layer receiving an abundant sprinkling of oil and water. In that condition the material is allowed to lie a certain time, according to the season and temperature. The fibres of jute are from five to eight feet in length, and in order to bring them to a spinning condition they used to be cut; but as a square end was not favourable to complete heckling nor correct spinning, the fibres are now torn asunder by being fastened by the ends to iron bars placed on either side of a wheel having a number of stout spikes on its rim. After a handful of jute is fastened to the bars, the latter are thrown forward, the spikes strike the jute in the centre, the fibres are severed, and a fine pointed end appears on each side. After the heckling process is completed the jute is treated much in the same way as lint or flax.

The works of Messrs. Cox Brothers at Lochee, called the Camperdown Jute Works, may be taken as a typical example of a jute factory. The whole of these premises cover an area of 28 acres. The factory is built in a most substantial manner of blocks of hewn squared freestone, quarried on the property and in the immediate neighbourhood. The arrangement of the Camperdown Works is so skilfully contrived that the various processes regu-

larly succeed each other without the least obstruction, loss of time, or unnecessary labour. Every precaution is taken against fire, and the ventilating and other sanitary appliances are of the most scientific and modern description. As the works are placed beside the Dundee and Newtyle Railway—one of the oldest railway lines in the kingdom, now wrought by the Caledonian Railway Company—all the material for the carrying on of the business is readily delivered by a branch siding that joins the line at Lochee. The bales of jute fibre are placed on trucks as they are taken from the huge jute ships in the docks, and are transported through Dock-street by a street railway and put on the line at the West Station. These trucks proceed with their cargo to Lochee, and are not unloaded until they reach their destination at Camperdown Works. The coals are tipped from the railway waggons beside the furnaces, which are connected with the thirty-eight two-flued boilers that supply steam as the motive power, and this steam is distributed by mains thickly coated with non-conducting material, passing along under the streets and avenues to the engines, which are in separate parts of the works, giving an aggregate of over 4,000 indicated horse-power. The consumption of fuel, even with all modern improvements, is 90 tons per day, and all this expenditure of force demands the guidance and co-operation of an army of 5,000 employes. Although smoke is consumed as far as possible, the residue and noxious gas is carried off by a highly ornamental chimney stalk 300 feet high and 35 feet wide at the base, built of red and white brick and stone, which cost £5,000, and which forms a conspicuous landmark from a great distance. By the gradual addition of various departments the firm is now in a position to spin the jute into yarn for other manufacturers, to weave every kind of jute fabric, and to put forth the finished cloth, calendered and ready for the market. The spinning mills contain over 30,000 spindles, and the weaving sheds 1,000 power looms capable of making cloth ranging in width from 30 inches to 120 inches. Over 120,000 bales of jute, of 400 lbs. each, are annually used, this being about an eighth part of the consumption of this material in Dundee and district, and about one-fourteenth of the total imported into Great Britain, much of which finds its way to the Continent. Some notion of the vast increase of the jute trade within the last 50 years may be formed by a comparison of the quantities imported to Dundee. In 1835, after serious efforts to make jute available had proved so far successful, the whole quantity imported was 1,136 tons. Last year (1889) the total number of vessels in this trade that arrived at the harbour was 81, with an aggregate tonnage of 149,896 tons, and this fleet landed 1,205,730 bales of jute, equal to nearly 215,900 tons. A large proportion of the jute manufactured at Camperdown Works is put forth as yarn; but besides this product the weaving sheds make annually from 30,000,000 to 40,000,000 yards of cloth of various kinds. Even a partial enumeration of the woven products of jute manufactured at Camperdown Works will show how largely this once despised material is now used. There is the ordinary pack-sheet, called Hessian, utilised not only for packing but also in the manufacturing of upholstery goods, sacking, bagging, tarpaulins for waggons and rick covers, shop twines, cords, ropes, harvesting and trussing twines, sacks for potatoes, grain, flour, and hops, biscuit and salt bags, sugar bags, cement bags, horse-blanketing, camp-stool cloths, woolpacks for the colonies, mattress cloth, bedticks, embroidery cloth and under-carpeting, matting, hearth-rugs, stair carpets, crumblinths, tablecovers, bedcovers, towels, tailors' padding, tan-canvas for school bags, trunk covers, and countless other requisites of commerce and domestic life. Messrs. Cox Brothers have attained a high reputation for the quality of their yarns, and many of the finest spinning machines which they use have been made by themselves at the works, and patented by members of the firm. The making of finished bags and sacks is managed by the overhead, hand-stitch machines invented by James Laing, a Dundee mechanic, and the sewing machine room is itself one of the marvels of modern ingenuity. Within the works there are well-equipped foundries, and workshops for engineers, mechanics, carpenters, joiners, plumbers, gasfitters, tinsmiths, painters, and glaziers. The greater portion of the buildings were erected by a resident staff of masons, who are constantly employed either making additions, reconstructions, or repairs upon the structures. There is a large dining-hall within the building for the use of the workers, and a building has been specially erected as a school for half-timers, where 500 young people receive free education under Government inspection. To ensure a steady supply of jute to keep this vast concern in operation, the raw material is collected in India by agents of the firm, packed at Calcutta by their own

hydraulic presses, and brought to this country by a fleet of vessels in which the firm has a large proprietary interest.

A gigantic business such as this could not have been built up as it has been within fifty years save by the exercise of rare commercial talents, combined with uncommon industry and foresight; and the history of the Cox family may be taken as a fair example of that of several of the leading merchant princes of Dundee. James Cook or Cox, the great-grandfather of the principal members of the firm, was a linen manufacturer in a small way at Lochee in the early part of the eighteenth century, and died in 1741. His eldest son, David Cook, continued the concern till his death in 1793, when it came into the hands of his younger brother James, who was a man of great enterprise, and one of the founders of the Dundee Banking Company. The latter resigned the business to his son, James Cook, in 1810, and by him the manufacturing of linen was prosecuted for some time with success. He gave up the business in 1827, and lived in retirement till 1848. His eldest son, the late James Cox, succeeded to the business when only twenty years of age, and as experiments in the manufacture of jute were then being made, he early saw the prospective advantage to be derived from its introduction, and by dint of perseverance ultimately made its use practicable. In 1841—exactly a century after the death of the first James Cook—he assumed his three brothers, William, Thomas, and George, as partners, and founded the firm of Cox Brothers, a firm which has now attained a world-wide celebrity. Power-looms were introduced to the factory in 1845, and the works have since been extended until they have reached the present colossal magnitude. The name of the Camperdown Linen Works was early bestowed upon the concern in compliment to the Earl of Camperdown, whose estate is in the vicinity. James Cox entered the Town Council in 1863, and was chosen Provost in 1872. He took a deep interest in the erection of the first railway bridge across the Tay, and his firm subscribed £10,000 towards that undertaking. His death took place on 1st December, 1885, when he had reached the 78th year of age. The other three brothers—William Cox, of Snaigow and Foggeyley, Thomas H. Cox, of Strathmartine, Maudslayi, and Dundee, and George Addison Cox, of Inverrossachs and Beechwood—are still members of the firm.

The other great jute-spinning and weaving firms in Dundee need not here be specifically described, as their growth and extension are similar in character and rapidity to those of Camperdown Works. Messrs. Gilroy, Sons, and Co., Limited, have developed a large business in the course of a comparatively brief space of time. This concern is now transformed into a Limited Liability Co., their principal works being in Lochee-road. Messrs. J. and A. D. Grimond, Bow Bridge and Maxwellton Works, were amongst the first to devote attention to the production of jute carpets and curtains, and in this department they have long held a leading place. Their business was founded about 30 years ago, and in 1885 they made large additions to their weaving factories, chiefly for the purpose of developing the manufacture of jute goods of finer quality. Bow Bridge Works occupy a large space of ground, having frontages to Dons-road and Calderum-street. The firm now known as Kinmond, Luke and Co. was founded in 1855, their factories being Pleasance Works, Lochee-road, and Ericht Works, Blairgowrie. The spinning mills in Scouringburn that formerly belonged to Messrs. Ritchie and Simpson were acquired by Mr. Charles Lyell in June 1887, and were then named Queen Victoria Works, as a memorial of the Jubilee of Her Majesty. Messrs. Malcolm, Ogilvie, and Co. have extensive spinning and weaving factories at Dons-road; and Messrs. John Sharpe and Sons are the proprietors of the large concerns known as Mill-street, Bower, and Edward-street Mills. Messrs. James Paterson and Co., Lawside Works, have made a speciality of jute carpetings; and Messrs. James Scott and Sons, Mid Wynd, have a very extensive business connection both at home and abroad for finished jute fabrics. Messrs. Thompson, Shepherd, and Co., Seafield Works, were the first in the jute carpet trade; and amongst the important firms engaged in spinning and weaving the firms of Messrs. Harry Walker and Sons, Calderum Works; Henry Smith and Co., Polepark; F. S. Sandeman, Manhattan Works; Alexander Henderson, Dudhope Works; John Henderson and Sons, Lindsay-street; A. and J. Adie; Gibson, Robertson, and Co., Craigie Works; Baxter Brothers and Co., Dens Works; and D. W. Wybrants, North Dudhope Works are well known. The works of Messrs. J. Smeaton and Son are at Carnoustie, and though smaller in extent than some of those named they are regarded as a model of what a weaving factory ought to be. These are the leading firms in an industry that has sprung into existence and reached

maturity within a very short period, whereby a very large proportion of the inhabitants of Dundee obtain a livelihood. It would be difficult to estimate the amount of capital sunk in this business, but it is easy to see even from this brief sketch that the financial operations of these firms must be enormous. The following is an approximate estimate:—Plant, buildings, and machinery, £6,000,000; wages paid annually, £1,500,000; outlay on stock of raw material, finished goods, depreciation, superintendence, etc., say £3,750,000, giving a total of £11,250,000 employed in the jute trade alone.—*Dundee Advertiser.*

(To be continued).

THERE is some talk about the resumption, at Calais, of the manufacture of cotton-lace, which was once successful.

THE Chinese make great use of a coarse kind of cloth made from the fibres of a climbing plant, the *Dolichos Trilobus*. It is woven most expertly by the weavers of Zeichou, and is worked up especially into trousers and jackets.

No licences are required and no fees are payable for commercial travellers in Chili, Columbia, Ecuador, Egypt, Morocco, or Peru. In the Argentine Republic each province levies special licence duties, which are valid only within that province. From Brazil no definite information has yet been received. In Japan no special regulations with regard to commercial travellers are in force; but they, like all other foreigners, are not allowed to travel in the interior for purposes of trade, but must confine their operations to the open ports. The information in regard to Mexico is not yet complete, but goes to show that in all the States of the Republic where there is any volume of business transacted, licences have to be taken out and fees paid. That there are no regulations existing affecting commercial travellers in the country is the report from Persia. As regards the United States, it is stated that, although the question of obliging commercial travellers to pay fees has been the subject of litigation in several States, it is only in Texas that any licence fee is levied. In Uruguay a graduated scale of licence duties is in force.

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

The districts' holiday season is now current, Todmorden this week having its first new outings. This town has hitherto had its annual holiday at the end of September, and will, no doubt, much appreciate the change. Haslingden follows at the end of this week. Also the Shaw spinning district closes to-day for seven days. The uniform weaving list has again been under discussion by a joint committee of masters and men, and the representatives have finally agreed upon details which they will respectively strongly urge their constituents to accept. The operatives have already had three hours upon its examination, and adjourned its further consideration until to-day, when there is little doubt entertained but that it will be finally accepted and the matter closed. The cotton market is again being manipulated for a squeeze in September by the chief operator of last year. The trade here, however, are regarding these movements with a great deal of indifference as most of them are provided with cotton until the end of the season under the contracts for gradual delivery which have been mentioned before in this column. The attendance on 'Change continues slack, being affected by various holiday causes.

COTTON.—The inflated price of cotton is leading the trade to utilise reserve stocks as much as possible, and consequently the sales of the week are much below the average. As the crucial time approaches for deciding the struggle between the bulls and the bears the contest increases in interest and attracts more attention. The condition is very critical and the victory of the bull party may be obtained by the free arrival of new crop cotton in September. Prices as shown by the official rates are practically unchanged.

The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forwarded.	Sales.	Stock.	Actual Export
American	14,791	36,665	22,490	343,610	2,481
Brazilian	387	2,405	1,770	36,020	788
Egyptian	897	2,544	2,390	89,840	179
W. Indian	31	1,250	1,850	8,370	92
E. Indian	8,812	5,842	4,100	256,450	1,890
Total	24,368	48,206	32,600	684,290	5,330

The following are the quotations from the same source:—

	G.O.	L.M.	Mid.	G.M.	M.F.
American	6 1/8	6 1/8	6 1/8	6 1/8	7
Pernam					M.F. Fair. G.F.
Ceara					6 1/2
Paraba					6 1/2
Maranhm					6 1/2
Egyptian					Fair. G.F. Gd.
Ditto, white					6 1/8
M.G. Broach					5 1/2
Dhollerah	4	4 1/2	4 1/2	4 1/2	5 1/2
Oomra	4 1/2	4 1/2	4 1/2	4 1/2	5 1/2
Bengal					3 1/2
Timnivelly	4 1/2	5 1/8	5 1/8	5 1/8	—

* Nominal.

YARNS.—Yarns have again been a small trade, users of American yarns showing no disposition to buy more than their necessities compel them to. Advances in cotton they now greatly disregard, as goods made from purchases at this date may have to face the market when a collapse has taken place, say six or eight weeks hence. Each day's turnover is less than an average in yarns for manufacturing account. For shipping the inquiry is of the smallest kind; the most that is heard of being for forward delivery, at considerably lower than current rates. Doubled, dyed, and gassed yarns are quiet both for home and export. A considerable interruption to the supply will, however, occur between now and the end of next month.

CLOTH.—The small business passing has been at steady rates, as manufacturers finding yarns strongly held are in no way ready to accept the unknown responsibility of the future on the basis of current prices. As in yarn there are inquiries for distant delivery, but the prices offered are rarely sufficient to induce acceptance. Best shirtings are firm; medium and low qualities are steady, but producers are disappointed with the little business passing. In home trade goods of all descriptions there is little doing, the present being the quiet season. A watchful attitude is general amongst manufacturers.

WOOLLENS AND WORSTEDS.

BRADFORD.

The demand for wools is quiet, this market being one of the worst for sales at the present time. Fine merino sorts have tended to droop downwards for some time. Cross-breeds are fairly steady. Prices of English wools are in favour of the buyers. Alpaca is dearer still, and there is a firmer feeling than has been known for a long time. In yarns, coarse mohairs have been enquired for, but woollen and worsted spinners complain that new business comes forward very slowly. The piece trade is slow.

LEEDS.

Most of the manufacturers of the best classes of coatings and suitings have some important export orders on hand. In the heavy woollen department a few repeat orders for beavers and meltons were placed at old quotations. The recent holiday has had an effect upon the sale of serges which is likely to lead to a delay in the improvement in prices. Goods of a similar finish to these, such as vicunas, are steadier in price than they have been for several weeks past. The most satisfactory prices now obtained by manufacturers are for specialities in costumes and mantlings. In blankets there has been little or nothing doing.

Repeats for beavers and meltons are on a small scale, and it will require some push to keep up the average. There does not appear to be any falling off in serges, but prices might be better. If we except a few specialities in goods suitable for ladies' wear, prices all round are reported to be most unsatisfactory, and anything but a healthy tone prevails. In better prints for the clothiers there is, perhaps, a little more doing; while in fancy tweeds trade is quiet. The seasonable weather, if it continues, will improve matters, as considerably more money is now paid away in weekly wages.

ROCHDALE.

The flannel trade displays no additional features of interest, there being still much divergence between the views of buyers and sellers. Fancies are quiet and higher values are asked for future business.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 12th August, say:—

WOOL.—The Scotch wool market continues without change. There is no great bulk of business doing, but a steady, consumptive demand by the home trade, which maintains values at current quotations.

SHEEP SKINS.—The supply continues liberal, and of good sorts competition continues favourable, and former rates are fully maintained.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

TUESDAY, 12th August, 1890.

American advices indicate a weak market for jute goods in New York. Calcutta, on the other hand, withdraws jute offers and asks a rise of 2s. 6d. to 5s. a ton. Here to-day the jute market on the spot is easier. Sellers feel the influence of the near approach of canal shipments, and are more willing to meet buyers. Firsts are offered from Calcutta to-day at £13 5s., and some business is reported there at a rise of 5s. a ton. Fine jute continues relatively dear and scarce.

Flax is rather more inquired for, and spinners would gladly give the lowest recent prices for Riga, good. Shippers are asking £19 for K.

There is again a rather better inquiry for flax yarn at the very low prices now current. This applies especially to the best warps.

Tow yarns are still very dull, and low offers are not refused. Jute yarns are easier to buy, say, 3d. per pound, all over, with sellers over.

Hessians are 1/2d. per yard lower than on this day week, and light Hessians are done under 1 1/2d. basis. Fine wide goods, upon the other hand, are not cheaper, and buyers say they are both scarce and dear.

Linens are still fairly inquired for. Forfar and Brechin are still busy, but the manufacturers compete eagerly for home trade orders, and buyers have the advantage. The heavy end of the linen trade is still the best. Arbroath is very busy, and Fifeshire also in all branches of the fancy linen trade is brisk.

MANCHESTER.

Although manufacturers profess to be well filled with orders, there is not much doing here. Prices, however, are firm, and the advance at Belfast in quotations for yarns has caused a steadier feeling. Reports of an apparently reliable nature state that the flax crop in Belgium, France, and Holland, will yield only one-half the usual production. This will probably further assist the efforts of manufacturers to raise prices. Distribution here proceeds slowly; the month of August is becoming quieter every year, and no one now expects to do much at this period. In a few weeks, however, matters should improve.

DRY GOODS.

MANCHESTER.

There has not been much doing here this week in the home trade with the exception of a few sales "as October." The demand for fancy laces has been slow, and travellers have had a somewhat disappointing experience. Russian net promises well. It is being made with velvet spots and sells from 3s 6d. per yard upwards. Black lace flouncings are spoken of favourably. The carpet section is inactive. Greek buyers have just finished operating, and the South Americans, who are amongst our best customers, are expected in the market shortly. Unfortunately, however, the coming season's trade will suffer owing to the unfortunate disturbances which have taken place amongst the Latin Republics. A distinct improvement is noticeable in the taste shown by Spanish and South American buyers, although "loud" effects still continue to be principally in demand.

MONTREAL.

Montreal letters, dated the 1st inst., say the fine crop prospects seem to have created more confidence in all quarters, and those who were inclined to take a gloomy view of the future a few weeks back are now amongst the most sanguine believers in a good fall business.

HOSIERY AND LACE.

LEICESTER.

Wool is only in limited demand, but laces, nevertheless, keep firm, and staplers are not slow at purchasing from country dealers. Botany and colonial wools and tops are slow, and some uncertainty prevails as to the probable course of future prices. August is proving a quiet month for spinners, although the lambs-wool section of the trade is fairly well engaged. Cotton yarns are not sold freely. The hosiery manufacturers complain that the trade is unreliable. Accounts, however, are not uniformly depressing, some having a more cheerful tale to tell.

NOTTINGHAM.

The lace trade is still depressed, and buyers are very backward. Orders are increasingly difficult to obtain, and the fancy end of the trade shares in the

prevailing dullness. August, however, is a much quieter month than it used to be, and a revival of some kind is looked forward to in the course of a few weeks. Certain descriptions of Valenciennes lace are inquired for to a fair extent, several new sets have come forward freely. For Vandykes the demand displays few features of interest, and the inquiry for Torchons is also slow. Silk laces has been slow for some time. Curtains keep well to the front, and costume nets made on curtain frames are also moving off well.

THE KIDDERMINSTER CARPET TRADE.

In the Brussels department of this trade the demand for goods continues extremely limited, and as manufacturers are not anxious to create stocks production is cut down as far as ever possible within actual requirements. In consequence of this and of the number of important changes taking place in the trade a rather large quantity of machinery and labour is thrown temporarily unemployed. Here and there a few orders for next season have been booked, but in the majority of cases manufacturers are still in the midst of pattern trying, and travellers cannot take to the road with their new season's patterns with much hope of success until well into next month. There is an all-round feeling of confidence that the spring trade will open more promising than was the case last year, and that there will not be much difficulty in maintaining the 2d. per yard advance made at Christmas. Although there is rather more business doing in the shipping department than a few weeks ago, consignments are still considerably less than they should be at this time. A fair business is being done in Royal Axminster, but favours are unequal. Some makers are pretty busy whilst others complain of flatness.

The local wool market remains sluggish and without improvement. Possibly an increased demand for worsted yarns would lead to an improvement in values for the raw material, as spinners' stocks are low, and they would thus be forced to replenish. At present transactions in yarns are limited, manufacturers are not disposed to book in advance of actual consumptive requirements, as they seem to think that by waiting better bargains may be secured.

The sale of the property belonging to the late firm of W. Whittall and Co. took place on Wednesday evening last. The lots consisted of a carpet warehouse, situated in Exchange-street, including offices, dyehouse stoves, engine, boiler, and other machinery, and 10 Brussels power looms. The buildings, etc., were sold to Mr. G. W. Whittall, who continues the business of the late firm, for £2,250. Six Smith's looms were also sold to Mr. Whittall for £22 each, and the remaining four were bought in by Mr. Arthur Whittall. Mr. Edward Smith, now of the Carpet Manufacturing Company, Limited, returns from his trip to America on Saturday.

Joint Stock and Financial News.

COMPANIES' DIVIDENDS.

The directors of Davenière and Co., Limited, have declared the dividend on the preference shares at the rate of 7 per cent. per annum.

ROSSENDALE COMPANY (WEBB AND IRWELL).—Dividend, 4 per cent. per annum. 40,000 spindles and 1,000 looms.

UNITED.—Profit, three months; £1,222; brought forward, £482; disposable balance, £1,704. The directors propose to pay a dividend of 1s. per share.

WINDSOR SPINNING COMPANY.—The directors' report states that a profit of £662 7s. 5d. has been made, which added to £308 6s. from last quarter, gives a disposable balance of £970 13s. 5d. This enables the directors, in addition to recommending a dividend of 10 per cent. to place £200 to the reserve fund, and carry forward £395 13s. 5d. to next quarter's account.

RYLANDS AND SONS LIMITED.—The half-yearly meeting of shareholders was held on Monday at the warehouse in this city, under the presidency of Mr. Carnelley (chairman of the board of directors). The report and statement of accounts were adopted. On the motion of the Chairman, seconded by Mr. Edmund Ashworth (Menai Bridge), and on the Chairman's proposal, seconded by Mr. W. Hulme (Southport), the dividend as recommended by the directors was declared. It was further agreed, on the motion of the Chairman, seconded by Mr. R.

Spencer, to add £29,385 5s. 6d. to the reserved fund. A vote of thanks to the Chairman, moved by Mr. Moore, of Barsoley, and seconded by Mr. Pullman, of Nottingham, brought the proceedings to a close.

NEW COMPANIES.

WILLIAM BARKER, LIMITED, TODMORDEN.

This company was registered on the 5th inst., with a capital of £50,000, in £100 shares, to acquire the cotton-spinning and manufacturing business of Mr. William Barker, at Wadsworth Mill, near Todmorden, and at Frankfort Mill, Littleborough. The subscribers are:—

Shares.	
1	*William Barker, Todmorden, cotton manufacturer
1	John Barker, Walsden, Todmorden, mill manager
1	*James Barker, Todmorden, bookkeeper
1	A. Barker, Todmorden, mill manager
1	H. Barker, Todmorden, bookkeeper
1	Mrs. William Barker, Todmorden
1	Miss S. Barker, Todmorden

The number of directors is not to be less than three nor more than five, the first are the subscribers denoted by an asterisk. Qualification, £1,000 in shares. The company in general meeting will determine remuneration. Registered office, Frankfort Mill, Littleborough.

WESHAM MILL COMPANY, LIMITED, KIRKHAM.

This company was registered on the 2nd inst., with a capital of £50,000, in £10 shares, to acquire the business of cotton spinner and manufacturer, carried on by the executors of the late W. H. Bowdler, at Washam Mill, Kirkham. The subscribers are:—

Shares.	
1	Mrs. E. A. Bowdler, Kirkham
1	*R. Bowdler, Blackburn, cotton spinner
1	*A. C. Bowdler, Blackburn, manufacturing chemist
1	*T. S. Bowdler, Blackburn
1	W. Wall, Wesham, mill manager
1	J. Ogden, Kirkham, bookkeeper
1	R. J. Yates, Wesham, bookkeeper

The number of directors is not to be less than three nor more than five, the first being the subscribers denoted by an asterisk. Qualification, £100 in shares; the company in general meeting will determine remuneration. Solicitors, Messrs. Charnley, Finch, and Johnson, Preston.

KAY AND SONS, LIMITED, BOLTON.

This company was registered on the 2nd inst., with a capital of £10,000, in £5 shares, 1,000 being deferred shares, to acquire the business of cotton doubler, carried on at Bolton by Joseph Kay, trading as Kay and Sons. The subscribers are:—

Shares.	
1	Joseph Kay, Bolton, cotton doubler
1	T. Yates, Manchester, yarn agent
1	H. R. Marsden, Bolton
1	W. Haughton, Bolton
1	Mrs. J. Kay, Bolton
1	J. Ramsden, Little Hulton, milliner
1	J. Horrocks, Southport, plumber

Registered without special articles. Solicitors, Messrs. Chester and Co., 36, Bedford Row, London.

JAMES ENTWISTLE, LIMITED, DIGGLE.

This company was registered on the 1st inst., with a capital of £5,000, in £10 shares, to carry on at Diggle or elsewhere the business of cotton spinners and manufacturers. The subscribers are:—

Shares.	
1	R. Hepworth, Mossley, mill manager
1	L. Heyworth, Salford, beerseller
1	J. Entwistle, Diggle, near Oldham, woollen manufacturer
1	J. Walker, Stalybridge, manager
1	J. E. Walker, Diggle, woollen manufacturer
1	J. Ashworth, Dakinfield, manufacturer
1	Mrs. A. A. Entwistle, Diggle
1	J. E. Walker, Diggle

Registered without special articles. Registered office, Wrigley Mill, Diggle, near Oldham.

THE MILLS PATENT SECTIONAL BOILER.

This company is incorporated with a capital of £100,000, in shares of £5 each, for the purchase of patents and patent rights granted to Messrs. Mills and Gresty, severally or jointly, for the United Kingdom, France, Germany, and the United States of America, for improvements in connection with watertube steam boilers, except so far as they apply to marine purposes, and to carry on business as watertube steam boiler makers in connection with such patents, and otherwise. The advantages claimed for the inventions over the best type of tubular boiler and over the Lancashire boiler are numerous, comprising economy in working, high pressures, sectional construction, non-liability to explosion, and practical consumption of smoke.

Arrangements have been made with an engineering firm of high standing for the manufacture of these improved boilers on favourable terms. The price to be paid by the company for the patent rights (marine purposes excepted) has been fixed at the sum of £45,000, payable as to £30,000 in fully-paid-up shares of the company, and as to the balance in cash.

Gazette News.

ADJUDICATIONS.

James Clarke, Priam-street, Queen's Park, Harpurhey, Manchester, out of business, late agent and warehouseman.

John M. Everard, Earl Shilton, Leicestershire, late hosiery manufacturer.

RECEIVING ORDER.

James Clarke, Priam-street, Queen's Park, Harpurhey, late warehouseman, Manchester.

PARTNERSHIP DISSOLVED.

James Birtwistle and Co., Wyke, near Bradford, calico printers.

SCOTCH SEQUESTRATION.

C. and W. Paterson and Company, calico printers, Dalmuir, near Glasgow.

Patents.

APPLICATIONS FOR PATENTS.

The names in italics within parentheses are those of Communicators of Inventions.

Where Complete Specification accompanies Application an asterisk is suffixed.

5TH AUGUST TO 9TH AUGUST.

12,180. R. L. HATTEBLEY and J. HILL, 58, Low-street, Keighley, Yorks. Shuttle-box and head operating mechanisms.

12,181. F. BRANLAND, 58, Low-street, Keighley, Yorks. Thread guides for reels.

12,191. W. HARGREAVES, 64, Barton Arcade, Manchester. Apparatus employed in making bags and sheets.*

12,192. J. C. HOWARTH and J. H. STOTT, 18, St. Ann's-street, Manchester. Dressing warps.

12,198. C. SHAW, 2, Eskell Chambers, Market Place, Nottingham. Warp lace machines for making "lap" and "press" and "knock-off" lace.

12,244. H. H. LAKE, 45, Southampton Buildings, London. Spools or bobbins, chiefly for spinning machines. (*George Otis Boynton*, United States.)

12,229. E. J. O'BRIEN, 53, Chancery-lane, London. Cotton-seed liners.*

12,265. W. THOMSON, 4, St. Ann's-square, Manchester. Piecing the ends of driving straps or belts.

12,273. G. E. DAVIS and A. R. DAVIS, 32, Blackfriars-street, Manchester. Sulphurous acid.

12,274. G. E. DAVIS and A. R. DAVIS, 32, Blackfriars-street, Manchester. Mono-hydrated sulphuric acid.

12,275. G. E. DAVIS and A. R. DAVIS, 32, Blackfriars-street, Manchester. Anhydrous sulphuric acid.

12,277. T. HARGREAVES, 8, Quality Court, London. Loom spindles.

12,227. R. A. GAGE, 151, Strand, London. Looping attachments for knitting machines.

12,323. R. A. GAGE, 151, Strand, London. Looping attachments for circular knitting machines.

12,356. J. Y. JOHNSON, 47, Lincoln's Inn Fields, London. Colouring matters from dihydroxybenzoic acid. (*The Badische Anilin und Soda Fabrik*, Germany.)

12,359. R. KELLET and THE SPRINGFIELD MILL COMPANY, 8, Quality Court, London. Selvedges of seals, plushes, and other suitable fabrics.

12,368. B. KERR and I. L. BERRIDGE, 333, High Holborn, London. Circular knitting machines.

12,369. BROOKS, SIMPSON, and SPILLER, LTD., and W. S. SIMPSON, 21, Cookspur-street, London. Blue-black and other azo colouring matters.

12,386. J. Y. JOHNSON, 47, Lincoln's Inn Fields, London. New materials for the preparation of dye stuffs. (*The Badische Anilin und Soda Fabrik*, Germany.)

12,403. W. H. CLAU, Tonge Villa, Middleton. New blue colouring matters on woollen fibre.

12,412. J. BARBOU, Falls Foundry, Belfast. Driving by ropes or cords.

12,473. W. T. STUBBS and J. HETHERINGTON STUBBS, 18, St. Ann's St., Manchester. Winding yarns or threads.

SPECIFICATIONS PUBLISHED.

1889.
 11,484. BARNWELL. Looms. 6d.
 12,626. ROBERTSON and ORS. Treating fibrous material. 8d.
 14,076. WALKER. Breaking flax, etc. 6d.
 14,257. ASHWORTH and ORS. Dyeing, etc., hanks of yarn. 8d.
 14,278. PATON. Spinning and twisting frames. 6d.
 14,495. THOMPSON, J. and B. Looms. 8d.
 14,556. ISHERWOOD, R. and J. Grinding carding engine flats. 8d.
 14,704. CRABTREE, W. A. and D. Looms. 8d.
 14,724. SNOECK. Looms. 8d.
 15,454. THOMAS. Yarn balances. 8d.
 19,898. THOMPSON (GRIFFIN). Braiding machines. 8d.
 1890.
 1,598. HORN (Kelly). Circular knitting machines. 8d.
 7,390. LONGMORE and WATSON. Decorticating rhea, etc. 8d.
 8,810. REFFITT. Pressing woven fabrics. 6d.
 9,318. REMBERT. Compressing and baling cotton. 6d.

ABSTRACTS OF SPECIFICATIONS.

4,551. March 15, 1889. Spinning. R. H. HAYWARD, Tall Mill, Crewkerne, Somersetshire.

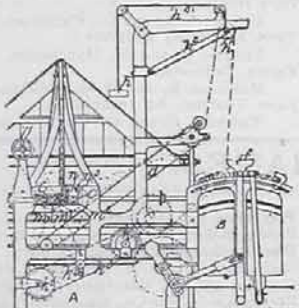
Scutching flax, etc.—The "strikers" and the feed board are provided with springs, the former in order that the force of the blow may be regulated according to the character of the material under treatment, the latter in order that its position may be regulated by the hand or knee of the operative. [84d. Drawings.]

4,565. March 16, 1889. Dyes. H. H. LEIGH, 22, Southampton Buildings, London. (E. G. Williams; Albany, New York, U.S.A.)

Relates to the preparation of colouring matters which dye unmercerized cotton in an alkaline or soap bath. Consists in combining one molecule of an alkalioid orcin, such as mono-, di-, or tri-methyl, ethyl, amyl, or acetyl orcin, or a sulpho acid thereof, or a compound of orcin with sodium chloride, with the intermediate compound obtained by the action of one molecule of the tetrazo compound of benzidine, toldine, dixilyl, stilbene, fluorene, naphthalene, or a sulpho acid thereof, upon one molecule of a known sulpho acid of naphthylamine. The compound of orcin and sodium chloride is obtained by saturating a 5 per cent. solution of orcin with salt, and boiling until it shows a green fluorescence with soda. In producing the colouring matters it is essential that the intermediate compound should be added to the orcin derivative, and not *vice versa*. Dyes resembling congo, benzo-purpurine, etc., are thus obtained. [84d.]

4,578. March 16, 1889. Doubling and folding fabrics. J. H. RILEY, Elton, near Bury, Lancashire.

The two operations are performed in one machine by passing the fabric from the draw rollers *e, c* of the doubling, crimping, or creasing or rigging machine *A* by means of an endless travelling band *d* and tension device *A*, *A*, *A*, *A* to the reciprocating guide piece *f* of the folding, plaiting, or cutting machine *B*. The tension device



consists of a pulley *A* on a pivoted arm *A*, which is balanced by a weight *A*. The machine *B* is driven from *A* by two conical rollers *A*, *A*, and a belt which is shifted longitudinally as required by a fork *A* operated by a screw *A* and strap from the hand-wheel *A*. The bearing-blocks *A*, *A*, of the draw rollers are inserted into the slot *A* through the aperture *A*, which is closed by a cap or cover *A*. [84d.]

4,587. March 16, 1889. Wire cards, etc. L. B. and G. F. FAIRBANK, Hope-street, Halifax.

The teeth of wire cards, combs, heckles, etc. are provided with a loop *O* on each leg, the shanks taking into grooves in the wood foundation, or between flat metal strips *A*, and are separated above the loops by a slotted plate *D*. The teeth are also held by wires passing through the loops, and are spaced transversely by heads *L* strung on the wires, or by another slotted plate similar to *D*. [84d.]

4,592. March 16, 1889. Spinning, etc. J. SHEPHERD, "Holly House," Davenport, near Stockport.

Rollers, covering.—A strip of thin tough paper is secured by one end to the roller, and wrapped a suitable number of times round it, the last folds being secured to each other in any suitable manner. The whole is then varnished with a mixture of shellac and methylated spirit, or other suitable varnish, to prevent the absorption of oil, etc. [44d.]

4,593. March 16, 1889. Spinning, etc. J. BOYD, Shettleston Iron Works, Glasgow.

Building motion.—The traverse rails are operated by rack and pinion or other suitable arrangements from a shaft

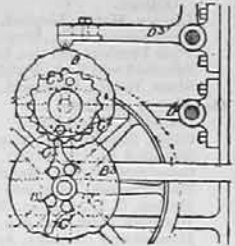
which is driven in opposite directions alternately, through differential gearing from the main driving shaft. [84d. Drawings.]

4,613. March 16, 1889. Winding-frames. W. KNOWLES, Hartford and Round Hill Mills, Bolton.

To prevent the eyes of the detector wires from being choked, and the yarn from becoming covered with lumps of "fly," "fluff," etc., a current of air is directed against the eyes of the detector wires and the surrounding parts, or against other parts of the machines as required, through a perforated tab which is reciprocated longitudinally, and also rotated or reciprocated about its axis. [84d. Drawings to Specification.]

4,614. March 16, 1889. Lace-machines. H. BORN, 38, London-street, Derby.

In addition to the two thread guide bars usually employed to make traversed net in double locker machines, other thread guide bars are provided for the production of patterns. Each is traversed by a bell crank lever *D* from a pattern plate *D* on a rocking lever *D* operated by a cam plate *B*, which also carries arms *C*, *C* for rotating the plate *D* by means of the toothed plates *C*, *C*. [64d.]

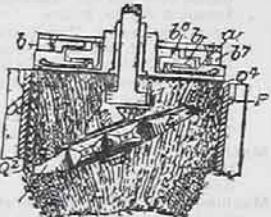


4,662. March 18, 1889. Spinning. J. W. WILSON and W. B. WILSON, Bevor Works, Barnsley.

Bing frame bobbins.—The bore of the bobbin is contracted near its upper end and provided with a metal thimble, which is secured in position by any suitable means and takes on to the upper part of the taper spindle, causing the bobbin to rotate uniformly with the spindle. [84d. Drawings.]

4,670. March 18, 1889. Knitting machines. G. F. STUBBINS, Wine-street, Highfields, and W. E., and F. BROWN, 9, Charles-street, Leicester.

Needles.—The stems are soldered into a groove, or one of a series of indentations, in the foot *B* according to the length of needle required for the cylinder, dial, etc. The needles in the ribbing dial are operated at the inner part of their course by a cam by acting upon the end of the foot instead of upon the projection *B*. Needle-beds.—A square enlargement *P* is made on the inside and near the ends of the grooves of both circular and straight machines.



Holding down work.—An automatic depressor *E* is employed, consisting preferably of a rotating disc, mounted obliquely and provided with rubbers and hooks on its periphery. Several modifications are described: the disc may be replaced by a plain cone or the like, or a brush, and may be driven positively; or a rubber ring or disc may be used in conjunction with it. The cylinder may be bell-shaped or corrugated internally, and covered with elastic material. The fabric may be prevented from rising with the depressor, by a plain or serrated guide *Q*, and points *Q*, or teeth *Q* may also be provided on the dial or at the top of the cylinder.

Fashioning.—For fashioning fabrics to be made into stockings, pants, or drawers, under-vests, etc., gussets are formed by knitting on a section of the needles only, and then on the whole as required. [1a.]

4,684. March 18, 1889. Lace. R. D. HEWERTSON, 71, Millmay-road, Stoke Newington.

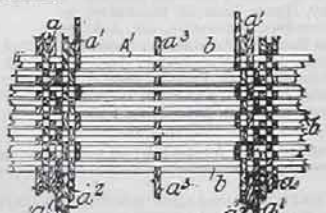
Constructed of elastic material and the ends united to form a band or ring. The lace is passed over pins or clips on the article to be adorned, such as boots, shoes, gaiters, stays, bands, gloves, etc. In the Provisional Specification it is stated that the ends of the lace may be free. [44d.]

4,735. March 18, 1889. Spinning, etc. A. J. BOULT, 325, High Holborn, Middlesex. (J. B. Maussen; Philadelphia, Penn., U.S.A.)

Spindles.—In order to ensure that the bobbin shall rotate uniformly with the spindle, the bobbin-rest is provided with one or more hooks, which engage with corresponding hooks situated in slots in the end of the bobbin, or formed by slots in a plate. [84d. Drawings.]

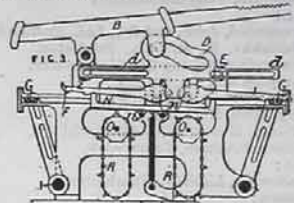
4,744. March 19, 1889. Towelling table covers, etc. C. J. WARR, The Old Bleach Linen Company, Randalstown, Antrim.

Relates principally to the weaving of linen goods, such as bath towelling, in which portions without warp threads are required. In the figure, *B* represents the weft threads, and *A*, *A*, as the warp threads, the spaces *A* being desolite of warp. The warp threads *A*, preferably differ in colour from the threads *B*, and are crossed from side to side of the latter



to form internal selvages. Warp threads may be woven in at *A*, and afterwards removed. In the loom employed the weft threads *B* are operated by a mail, which, by Jacquard and lingo mechanism, or by lease connection with an upper and two lower head shafts, is drawn from side to side of the other selvage threads *A*, as required. [84d.]

4,757. March 19, 1889. Looms. S. WALKER, Redcliffe and G. LEECH, 73, Victoria-street, Radcliffe, Lancashire.



Dobby.—For weaving fancy cloths by a positive shed, the jack levers *B*, which are connected with the upper and lower parts of the healds, are operated by slotted cam pieces *D*, the ends *d* of which slide in comb rails *E*. Pivoted to the pieces *D* are hooks *F*, operated at times by reciprocating knives *G*, formed with incline edges. The hooks rest on spring levers *N*, with two fulcra *n*, *n*, and set by the post of two pattern chains *R*. The knives *G* are operated by levers *H* on rock shafts *I*, which receive motion through levers from a crank-pin on a suitably driven wheel; the parts may be adjustable to give the required stroke. The pattern cylinders *O* are driven through bevel pin and gear-wheel mechanism from the crank-pin wheel. In weaving light cloths with slight tension on the warp threads, a bar on the rail *E* carries flat springs bearing on the ends of the cam pieces to prevent their back motion until actuated by the knives. [1a.]

4,768. March 19, 1889. Combing machines. F. UNWIN, 154, Chaussee-de-Norm, Brussels, Belgium.

Dabbling apparatus. Three dabbling brushes are used, operated through adjustable connections by eccentrics, mounted preferably at 120° from each other, upon a shaft at right angles to a line joining the two pillars of the machine. The first brush is arranged to have a longer throw than the others, and just presses the fibre into the points of the pins, and the other brushes have about half the throw of the first, and pass further into the comb circle, and in their highest position only just clear the points of the pins. Lubrication is effected from suitable reservoirs, excess of lubricant collecting in an enclosing box. [64d. Drawings.]

4,777. March 19, 1889. Weaving pile fabrics. A. and J. MORRIS, Darvel, Ayrshire.



Tapestry, Brussels, plush or pile, and similar fabrics for carpets, curtains, rugs, and the like, are woven with the same pattern and colouring on both sides. The figure relates to Brussels carpet, the pattern warps *w*, when not depressed to the back, or raised over the wires *W* to form pile, being floated between the two plies formed by the weft *x*, *x*, and the binding warps *v*, *v*, the latter not crossing from ply to ply. For cut pile fabrics the usual blades or knives are employed in place of the wires. The pile may be produced on one or both sides of the fabric, and the method of tying it in may be varied. The binding warps may be dispensed with. In the loom employed, the pattern warps are operated by a jacquard, and, on rising and falling, comb-board, the binding warp being worked by healds. [84d.]

4,825. March 19, 1889. Dyes. J. LEMAY, 28, Southampton Buildings, London.—(La Soc. Anon. des Matieres Colorantes et Produits Chimiques de St. Denis, A. F. Poireur et D. A. Rosenstiel; all of 28, Boulevard de Strasbourg, Paris.)

Acid dyes.—Consists in combining the diazo derivatives of the mono and diamphylamine acids of aniline, sulfoniline, xylylidine and naphthylamine, with a-naphthylamine, and again diazotising and combining with phenylated, toimidised, benzimidised, xylylidised, or naphthylidised metapheylendiamine, or with the corresponding secondary and tertiary derivatives of cresylendiamine or of xanthyldiamine. For example, the soda salt of a-naphthylamine, diazophonic acid is diazotised by means of sodium nitrite and hydrochloric acid and the diazo compound is run into a solution of a-naphthylamine hydrochlorate. The product is then diazotised as before, and the precipitated diazo derivative is introduced as a paste into an alcoholic solution of diphenylated metapheylendiamine. The colouring matters obtained dye wool deep colours, extending to black, which are said to be fast to light, air, and soap. [44d.]

4,829. March 19, 1889. Looms. P. M. SAUT, 12, Rue Leroux, Amiens (Somme), France.

Relates to single or to duplex looms for producing a single figured fabric or several fabrics, such as ribbons, at one time, or for weaving two fabrics one above the other, or for other purposes. [84d. Drawings.]

4,834. March 20, 1889. Heckling machines. A. COMBS, Falls Foundry, Belfast.

The channel carrying the strike holders is raised and lowered by means of a lever, to the upper edge of which a connecting rod is adjustably attached by means of a clip, the inner and lower edge being formed into a cam surface, and operated by a roller on the face of a wheel. During the period at which the channel is at rest in its highest position, the holders are transferred along it from one set of tools to another by means of a weighted lever, which is raised and, at the proper time, allowed to fall by means of a cam and lever arrangement. [64d. Drawings.]

PATENTS.
 W. P. THOMPSON & CO.

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- Auctioneers:**
Rushton, Edward, and Son, Blackburn, and Manchester.
Salisbury & Hamer, Blackburn and Manchester. Unsworth, Geo., Manchester.
- Belting:**
Greenwood, John, and Co., Ltd., Todmorden.
Reddaway, F., and Co., Pendleton.
Rossendale Belting Co., Manchester.
Sampson and Co., Stroud.
- Bobbins, Spools, Shuttles:**
Kay, John, Rochdale.
Livesey, Henry, Limited, Blackburn.
Wilson Brothers, Todmorden.
- Boilers:**
Galloways, Limited, Manchester.
- Calenders:**
Hoyle, E., and Sons, Limited, Halifax.
Riley, J. H., and Co., Bury.
- Card Clothing:**
Whitley, John, and Sons, Halifax.
- Cement, Mineral Fusible:**
Fox and Williams, Manchester.
- Chemicals:**
Grimshaw Bros., Clayton, Manchester.
- Cop-Tubes:**
Jagger & Co., Oldham.
- Cop-Tubing Apparatus:**
Jagger and Co., Oldham.
- Cutters (Spiral) and Ledger Blades:**
The Smith's Patents Co., Sheffield.
- Gold and Silver Wire:**
Makinson, E. and W. G., Preston.
- Dust Fuel Furnace:**
Donkin, B. and Co., London.
- Emery Filleting:**
Dronsfeld Brothers, Oldham.
- Engines:**
Goodfellow, Ben., Hyde.
Musgrave and Sons, Ltd., Bolton.
- Engineering Work:**
Bransby Foundry and Engineering Co., London.
Hoyle, E., and Sons, Limited, Halifax.
- Fire Hose:**
Reddaway, F., & Co., Pendleton.
- Furnace Bars:**
Bransby Foundry and Engineering Co., London.
- Hydraulic Presses:**
Dickinson, Wm., & Sons, Blackburn.
Hoyle, E., and Sons Limited, Halifax.
- Hydro-Extractors:**
Broadbent, Thomas, and Sons, Huddersfield.
- Indicators:**
Orme, G., and Co., Oldham.
- Jacquard and Card Cutting Machinery:**
Devoe & Co., Manchester.
McMurdo, James, Manchester.
- Knitting Machinery:**
Harrison, W., Manchester.
- Lattices, Pegs, Jacquard Slips, &c.:**
Livesey, Henry, Limited, Blackburn.
Stone and Burnett, Preston.
- Looms etc.:**
Butterworth and Dickinson, Burnley.
Dickinson, Wm., & Sons, Blackburn.
Dugdale, John, and Sons, Blackburn.
Hacking and Co., Bury.
Hall, Robert, and Sons, Bury.
Hutchinson, Hollingworth, and Co., Dobcross, Oldham.
Livesey, Henry, Limited, Blackburn.
Pemberton and Co., Burnley.
Platt Brothers and Co., Limited, Oldham.
Schofield and Kirk, Huddersfield.
Shaw, Wright, Stockport.
- Machinery (Cotton):**
Bethel, J., Manchester.
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 Sons, Manchester.
Howard and Bullough, Accrington.
Hurst, W., Rochdale.
Lees, Asa, and Co., Limited, Oldham.
Lord Brothers, Todmorden.
Platt Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Tatham, John, and Sons, Limited, Rochdale.
Taylor, Lang and Co., Stalybridge.
- Machinery (Dyeing, &c.):**
Dickinson, Wm., & Sons, Blackburn.
Heppenstall, E., Huddersfield.
Riley, J. H., and Co., Bury.
- Machinery (Silk):**
Curtis, Sons and Co., Manchester.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Holden, G. H., and Co., Manchester.
Horrocks, John, and Sons, Manchester.
Platt, Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield.
Taylor, Lang and Co., Limited, Stalybridge.
- Machinery (Sizing, Filling, &c.)**
Dickinson, Wm., & Sons, Blackburn.
Riley, J. H., and Co., Bury.
- Machinery (Woolen 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.
- Patent Agents:**
Bossardt, 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:**
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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.
- Temples, etc.:**
Blezard, James, and Sons, Padiham.
Lupton Brothers, Accrington.
- Tools (Machine):**
Hetherington, John, and Sons, Manchester.
- Ventilation:**
Blackman Ventilating Co., London.
Benshaw and Co., Manchester.
Rothwell, John, Farnworth.
- Warping Machinery (Sectional):**
Bethel, J., Manchester.
- 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.
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