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In all Branches of the Textile Industries.

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The Textile Mercury.

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

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Current Topics.

THE INDIAN FACTORY COMMISSION'S REPORT.

A little more intelligence regarding the Indian Factory Commission's Report has filtered through the telegraph from Calcutta. It is stated that, in addition to what we gave last week, the Commission makes the following further recommendations :—

First, factories may work on a Sunday following a native festival holiday; but if two such holidays occur in one week, the two following Sundays should not be working days. Secondly, there should be a compulsory stoppage of work for 30 minutes about midday for male operatives not employed on the shift system. Thirdly, Bombay mill hands should be paid monthly wages. Fourthly, the Commission having found that most of the mills round about Calcutta, and some in Bombay, Ahmedabad, and Cawnpore, provide medical advice and treatment for their operatives, they bring this subject to the favourable consideration of employers who have not yet adopted the dispensary system, and they also recommend the starting of provident funds for operatives disabled by accident or disease, and the provision of instruction for children.

We do not care to begin the discussion of the recommendations of the Commission on the meagre details that have yet arrived, but we may be permitted to observe that if anything like an accurate outline has been presented here, the individuals constituting the Commission have been very inadequately qualified for the task in which they have been engaged, so far as their possession of any practical or theoretical knowledge of the subject extends. The truth of this statement is demonstrated beyond dispute by the concluding statement of the report, which is as follows :—

We hope we may be allowed to say that we have been profoundly impressed with the vast and far-reaching benefits which the people of India are deriving from the development and prosperity of the great industries which we have seen in our tour. It would, in our judgment, be a great calamity if, by any injudicious recommendations or unnecessary restrictions, the prosperity of those industries was endangered.

Really, the Commissioners appear to have been overwhelmed with the magnitude of the industries into the superficial condition of which they have been making an investigation, and of the vast and far-reaching benefits that are likely to spring from their development and prosperity. Yes, it is indisputably true that India will derive great benefit from the development of these industries; but we must ask that those benefits shall be obtained without a repetition of the distressing experiences of the English cotton trade operatives from 1800 to 1850, of which probably not a single one of these Commissioners has ever heard. We should like to know what these good people consider injudicious recommendations and unnecessary restrictions. Are they those of the English Factory Laws? If so, how do they make them out to be less necessary in India than in England? Are the capitalists of the former country, either native or foreign, of a more kindly and benevolent disposition than those of the home industry? Or would they pronounce the restrictions of the English industry injudicious and unnecessary? If so, they would run counter to the common conclusions of the much more experienced public at home. In order to give these gentlemen a little very necessary education upon the subject that has been engaging their attention, we would strongly advise their being remitted as a Commission to this country to continue their studies, during which, perhaps, they might discover what a great calamity it would be if, by injudicious and inequitable liberties permitted to competing industries in one of our dependencies, the prosperity of British industries was not only endangered but destroyed, the capital invested therein irretrievably lost, the great population engaged in them dispersed, or starved off the face of the earth, and a blow struck at the welfare of the kingdom such as no power in the world could otherwise inflict. We should like to ask whether the Commissioners in their deliberations during the drafting of their Report ever looked at the subject in this relationship?

THE IMPERIAL FEDERATION LEAGUE AND COMMERCIAL TREATIES.

The Imperial Federation League, of whose objects we have expressed approbation ever since this journal was founded, continues its good work for the more perfect unification of the British Empire. It has secured the adhesion and active co-operation of the most intelligent men of all parties, and we are pleased to think its labours have had an appreciable influence upon the course of Imperial politics. As our colonies and dependencies have, to a large extent, the liberty of dealing freely with their own fiscal matters, and of imposing or remitting tariffs at their own discretion, it is quite desirable that they should possess the power, if they desire it, to accord exemptions from import duties to the productions of the mother country. At present in relation to two countries, Germany and Belgium, they are restrained from so doing by existing commercial treaties. The clauses in the treaties preventing this the League—rightly as we think—desires to have abrogated, and accordingly at a meeting of the General Council, held last week at the offices of the League, 30, Charles-street, Berkeley-square, Lord Brassey in the chair, the following resolution was unanimously adopted :—"That the Imperial Federation League make formal representation to the Board of Trade Commercial Treaties Committee now sitting concerning the paramount importance of the earliest possible notice being given to the King of the Belgians and the German Emperor of the intention of her Majesty to cancel the clause in the treaties of commerce of 1862 and 1865 restraining colonial Governments and

peoples from according any fiscal advantage to British goods over those of Germany and Belgium." It will be obvious that these clauses constitute a serious disadvantage to our colonies in dealing with their own fiscal arrangements. In fact the arrangement is a contradiction of the spirit of the liberty we have granted them of conducting their own business in their own fashion. This liberty, if perfect, would imply the right to grant or withhold, enlarge or contract, and to discriminate in these matters between fit and unfit recipients of their favours. We sincerely trust the League will press the matter with all its power upon the attention of the Government. Considering the offensive spirit that is abroad masquerading under the name of Protection, which seems to believe that a blow struck by a country at the interests of its neighbour is a benefit secured to itself, it is quite time that we resumed all the powers we possess, but foolishly fail to exercise, for the purposes of protection in the case of emergencies. Unfortunately good examples do not always carry with them sufficient force to secure their extended adoption; and as long as thieves neither affect nor practice hesitation in robbing honest men, it is necessary that the latter should at all events arm themselves sufficiently to repel attacks that may be made upon them.

EARLY CHINESE TEXTILE DESIGNS.

Although China was for so many ages either entirely cut off from the western world, or very loosely connected with it, it not improbably contributed in comparatively early times to the splendour of the western courts. All the silk which was in circulation in the West until the second century after Christ seems to have come either from China or the neighbouring India. Not improbably the gorgeous Solomon owed something of his magnificence to the fabrics of the distant East. At any rate there can be no doubt that his ships, or those of his friend Hiram, were directly or indirectly in communication with the silk-producing districts. Be that as it may, Chinese textile art contributed ornaments which became widely current in the West without any knowledge on the part of most of those who used them of their origin. Chinese fabrics bearing Chinese designs carried the religious symbols of Eastern Asia to Alexandria, from which they were diffused through the Roman Empire, and, in the course of time, pressed into the service of Christian art. We have evidence of this in the fact that many representations taken from the animal and vegetable worlds which are ascribed to Sassanian, Byzantine, and early Italian art, are found at the present day in Japan. The resemblance is so close that scholars versed in the subject have assumed that the designs must have been imported into Eastern Asia from the West. That, however, would be carrying coals to Newcastle. Modern research enables us to correct our notions about mediæval art, and thus we are now able to explain, *e.g.*, the unicorn which was sacred to the Madonna. It is one of the four holy animals of the Chinese. If it were seen in the Imperial gardens its appearance announced the advent of a beneficent and glorious prince of peace. And this Chinese notion was transferred by the Church to Christ and the Virgin Mary. The angel Gabriel, in the form of a hunter, is represented as driving the unicorn into a flowery enclosure, where it takes refuge in the lap of the Virgin. If these ideas are correct, and they are urged by an accomplished writer, the weavers and designers of the Celestial Empire exerted a potent influence in lands of which probably they had never heard.

BREACHES OF THE FACTORY ACT AT HASLINGDEN.

Two prosecutions for breaches of the Factory Acts, instituted by Mr. Birtwistle, factory inspector—and son of Mr. Thomas Birtwistle, secretary of the Northern Counties Weavers Association—were heard at the Haslingden Police-court on Monday, both of which call for a few remarks. Let us say at once that we impute no blame either directly or indirectly to Mr. Birtwistle in either case, as the point of our remarks will not hinge upon his share of the proceedings. In the first case the Hargreaves-street Manufacturing Company, Limited, were summoned for employing four women and a young person at 36 minutes past five o'clock on the afternoon of the 18th October, the proper time being 5-30. Mr. John L. Whitaker, for the defence, admitted the offence, and said the engineer was to blame, as Mr. Cartmell, the new manager, did not allow any overtime running. Fines of 20s. and costs were imposed in one case, and costs in the remaining four cases. This case brings up the question we have raised before as to the responsibility of subordinates. Here is a distinct plea put in by a respectable and well-known firm that the offence was committed in direct violation of their instructions through their manager. If the firm had taken all reasonable means to bring their desires to the knowledge of their engineer, we submit that that individual ought to have been the one prosecuted and made to pay the fine, and not his employers. We should like to know whether Mr. Birtwistle made any inquiry or received any information on this point before instituting the proceedings? We hold that if it could have been proved to him with a reasonable degree of certainty that they had, it was his duty to have summoned the engineer. As there appear to be conflicting views entertained amongst the inspectors, we would suggest that they should appeal to the higher quarters for instructions upon the point. We hold that the Government ought to submit a case to its law officers upon points of this kind in order that its servants may have an authoritative opinion upon the subject to guide them in their duty. We can hardly accept the view that the personal opinions of the inspectors, or even a bench of local magistrates, are of such weight as to entitle them to unquestioning acceptance, while on the other hand it is not likely that for the small amount usually involved a manufacturer or spinner will care to encounter the annoyance and cost of an appeal to a higher court. Thus it may arise that a constant succession of petty acts of injustice may be committed. We say again the Government ought to provide its servants with an authoritative opinion on this matter.

COTTON OPERATIVES AND ITINERANT CIRCUSES.

The second of the prosecutions to which we referred in the preceding note was that of the Hutch Bank Manufacturing Company, Limited, who were summoned in ten cases for running their mill six minutes beyond the legal closing time on the 5th November, when the Inspector (Mr. Birtwistle) found the mill at work, and took the names of ten women illegally employed. Mr. John L. Whitaker, for the defence, admitted the offence, which was owing to the workpeople coming to the mill very late after the dinner hour, they having stayed away to watch a circus procession; and although they only worked six minutes overtime, it did not by a long way balance the time lost by the workpeople foolishly staying away to watch the circus when they ought to have been working. A fine of 20s. and costs was imposed in one case, and costs in the remaining nine cases. This is another example in which what is virtually a piece of injustice was done. No one has intended it, perhaps, but the fact is there. "A show" has always been a weakness and an irresistible temptation to the factory operative, and very probably to his predecessor, the hand-loom weaver. In the days of the latter, however, contracts were not so inflexible, and laws—well, there were none for home work. The fathers and mothers of the youngsters who plied the picking stick had a ready means of compensating themselves by compelling the "gadding" weavers to remain on the "sitting-tree" until they had made up for all time lost by leaving their looms to follow the hounds, to watch the antics of a dancing bear, or to gaze with open eyes and mouth upon the clowns of a wandering circus. In such cases what harm was done? We say none. And in the prosecution instituted by Mr. Birtwistle—though he has certainly the letter of the law upon his side, and the defendants had technically broken it—the case was certainly one that should have been passed over. It was far better from an equitable point of view that the employers should have made up their loss caused by the giddy folly of the weavers, than that they should have thrown the establishment into a ferment by inflicting fines upon those who absented themselves. But no! Mr. Birtwistle, as a new broom must sweep clean, and accordingly drops upon the employers, finds the law being technically broken, and institutes a prosecution, with the result stated above, which is an instance of those numerous cases of injustice that are exceedingly irritating whilst not very serious. Suppose that instead of endeavouring to make up their loss in this way the employers had imposed a small fine upon every weaver who had stayed away. What a hub-bub there would have been, and very probably a strike, and a call upon the Weavers' Associations to resist such arbitrary tyranny; metaphorically speaking the fiery cross would have been sent round the districts from Clitheroe to Longdendale, from Chorley to Todmorden, and the clans would have gathered for a raid upon the Hutch Bank Company, in order to uphold "the eternal principles of justice," and punish those who would break them. But as all this through the consideration of the employers has been prevented, we have a suggestion to make whereby justice may be met. Let the operatives of this mill who have been the cause of it subscribe the amount of the loss and the fines from their wages next Saturday, and hand the sum over to their employers. Or, and this is an alternative, let the Weavers' Association pay it from their funds. Surely these societies, which are so anxious to secure justice, will not withhold the remedy when their own members have been the cause of inflicting the injustice. Their organ in the press might take up the matter with advantage to the reputation of those on whose behalf it is ever ready to buckle on its armour.

THE PROSPECTS OF THE SHIPPING TRADE.

The failure this week of several United States dry goods firms, and the collapse a short time ago of various merchants in Canada, have produced an uneasy feeling amongst those British shipping houses that do business with Transatlantic firms. Messrs. Belivean and Archumbault, Ross, Foster, and Co., Lamonte, and other concerns in the Dominion are included amongst

the unfortunates, and the largest house in Ottawa, with somewhat extensive liabilities in Europe, has ceased payment, its indebtedness being estimated at £60,000. The United States Treasury is making every effort to relieve the position of some of its embarrassing features by buying bonds freely, $7,696,200 having been liberated in this way during the course of a few days. Notwithstanding this, however, failures continue to take place. Messrs. Colbron, Chauncey, and Co., stockbrokers, of New York, and Messrs. Whitten, Burdette, and Young, drapers, of Boston, have suspended payment. The liabilities of the latter firm are estimated at one million. Large gold imports are expected; it is believed they will reach five millions of dollars, and this increases the firmness. The ability to import gold through depressed sterling exchange rates arises mainly from the disinclination of the New York banks to carry cotton bills any longer, and they are being freely sold at whatever they fetch to raise money. In New Zealand a large firm of importers has failed, with liabilities exceeding £20,000, and we are warranted in saying that the immediate prospects of the shipping trade have not been so dull for a long time. It is known that discounts have been difficult to obtain in the States except for what the Americans expressively term "gilt-edged" paper. In Canada the hopeful anticipations indulged in owing to the abundant harvest of this year have not been realised, and remittances have come forward very slowly. Wholesale houses in Montreal and Toronto found that payments in Quebec and Ontario were not prompt, and in districts where timber is the chief industry business has been very poor owing to the depressed state of the trade in England. The principal disturbing influence in the Antipodes has, of course, been the strike, the ruinous effects of which are now being felt throughout the colonies. South American trade continues in the depressed condition already referred to in these columns, so that the outlook generally is indeed gloomy at the moment. It is a curious fact, however, that in this country, which in the minds of many has been the origin of these financial troubles the world over, through the difficulties of Messrs. Baring Brothers, no disturbance has, practically speaking, taken place as yet.

THE BOARD OF TRADE RETURNS FOR NOVEMBER.

So far as regards the entire trade of the country, apart from the textile industries, the returns for the last month are not unsatisfactory, considering the unusually large figures for November, 1889. The imports are valued at £37,152,000, a decrease of £4,184,000, or about 10 per cent., and the exports of British goods at £21,026,000, a decrease of £1,245,000, or about 5½ per cent. The imports in November last year reached £41,337,091—the highest ever attained, and the total of the exports was also one of the highest recorded. Another cause of the decline shewn in each case on the present occasion is that in last month there were only 25 working days, as compared with 26 in the corresponding month of last year. As regards the imports the annexed tables shew general decreases, except in flax and hemp, the falling off in the import of wool being very marked indeed. Of this staple, Australasia sent only half of the amount that was received thence in November, 1889, the other specified countries having sent more. Cotton from the United States is less by 170,000 cwt., the quantity from Egypt being the same. With reference to the exports the tables also shew a very general decrease, practically in all textile articles except jute yarn and piece goods. Woollen yarn and cotton yarn, together with the respective piece goods, have all very sensibly diminished. Whether it be that the higher prices of wool have tended to check the exports of wool and worsted goods or not, it is clear that the shipments have considerably fallen off during the current year. In the following abstract we give particulars of the imports and exports of textiles, etc., for the month:—

I.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE.

Principal Articles.		Quantities. 1889.	1890.
Cotton, raw	Cwt.	2,536,766	2,318,083
Flax	,,	84,321	112,400
Hemp	,,	163,588	205,758
Jute	Tons	31,612	36,882
Silk, raw	Lb.	327,183	919,570
Wool, sheep and lambs'	,,	56,750,172	49,182,183
Woollen Stuffs	Yds.	4,128,663	3,706,317

Principal Articles.	Value. 1889.	1890.	Increase or Decrease per cent. compared with Nov., 1889. Q'ntity.	Value.
	£	£		
Cotton, raw	6,912,881	6,430,173	†8·2	†6·9
,, manufactures	186,064	176,541	—	†5·1
Flax	175,888	202,062	*9·3	*15·2
Hemp	285,595	367,626	*25·7	*28·7
Jute	481,328	463,371	*16·8	†3·7
Silk, raw	234,294	164,020	†32·9	†29·9
Wool, sheep & lambs'	2,388,947	1,630,804	†28·2	†32·1
Woollen Stuffs	855,665	321,860	†10·2	†9·5

*Increase. †Decrease.

II.—EXPORTS OF BRITISH AND IRISH PRODUCE AND MANUFACTURES.

Principal articles.		Quantities. 1889.	1890.
Cotton Yarn and Twist	Lb.	23,410,700	21,630,100
,, Piece Goods	Yards	427,762,000	394,910,300
Jute Yarn	Lb.	2,678,100	2,973,100
,, Piece Goods	Yards	22,542,200	24,411,300
Linen Yarn	Lb.	1,189,400	1,263,8 0
,, Piece Goods	Yards	11,662,600	10,172,303
Wool, sheep and lambs'	Lb.	1,710,000	2,600 400
Woollen and Worsted Yarn	,,	4,263,800	5,604,800
,, Tissues, heavy and light, broad and narrow	Yards	5,598,000	4,077,10
Worsted Tissues, heavy and light, broad and narrow	,,	12,013 800	9,890,000
Woollen Carpets	,,	787 000	624,300
,, Flannels	,,	1,699,300	1,259,400
,, Blankets	Pairs	154,490	162,002

Principal Articles.	Value. 1889.	1890.	Increase or Decrease per cent. compared with Nov., 1889. Q'ntity.	Value.
	£	£		
Cotton Yarn and Twist	1,067,177	1,042,119	†3·2	†2·3
,, Piece Goods	4,369,844	4,233,564	†7·6	†3·1
,, Other Manufactures	591,499	606,867	—	*0·9
Haberdashery	169,604	144.721	—	†14·6
Jute Yarn	31,355	31,356	*11 0	—
,, Piece Goods	225.166	23•,767	*8·3	*2·4
Linen Yarn	68,286	74 661	*6 2	*9·3
,, Piece Goods	297,344	253,079	*12·7	†14·8
Machinery and Millwork	1,449 548	1,314,200	—	†9·3
Silk Manufactures	193,063	124,955	—	†35·3
Wool, sheep and lambs'	73,393	83,395	*52·0	†13·7
Woollen and Worsted Yarn	418,886	337,745	†15·4	†14·6
Wool'n Tissues, heavy & light, narrow & broad	457,167	373.153	†24·4	†18·4
Worsted Tissues, heavy & light, narrow & broad	776,192	554,727	†17·6	†28.5
Woollen Carpets	88,202	68,059	†20·6	†22·8
,, Flannels	62,452	45,747	†25·9	†22·9
,, Blankets	57,640	60,773	*5·2	*5·4

*Increase. †Decrease.

MACHINE EMBROIDERING.

The following facts regarding the growth and condition of this industry will be interesting to our readers. A machine of this class was invented in 1829 by Joshua Heilmann, of Mülhausen, in Alsace—celebrated more particularly for his invention of the cotton comber—but it was hampered by serious defects. Franz Elisäus Rittmeyer, of St. Gallen, improved it, in the years 1840—1850. At the present time there are in East Switzerland 24,000 machines at work, which make it possible for St. Gallen to export embroideries to the value of more than 100,000,000 francs per annum. In Saxony about 5,000 machines are at work in Plauen, etc., and about 7,000 more in the other countries of Europe and North America. East Switzerland employs about 60,000 persons in this department of industry, amongst whom are 1,000 designers, who are said to produce more than half a million of new patterns every year.

MIGRATION OF FRENCH SILK WEAVERS FROM THE TOWNS.

A remarkable feature in the present condition of the silk industry in France is the tendency of the workers to remove from the towns into the country. A time, indeed, can be foreseen when all ordinary work in this department will be intrusted to the looms of the country. The art workman alone can afford to stay in the great cities, where living is so dear. Lyons now has little more than 12,000 to 14,000 hand-looms, whereas it had as many as 35,000 to 40,000 in the flourishing era of figured stuffs. Not fewer than 50,000 to 60,000 hand-looms have been removed into the rural districts, together with 25,000 power-looms. Many are established in the neighbourhood of Lyons; 500 in Ain, 1,000 in the Ardèche, 9,000 in the Isère, 3,500 in the department of Loire, 2,000 in the department of Rhone, 1,019 in Savoy, etc. The manufacturers of Lyons have erected workshops even in Drôme, Gard, Haute Loire, Puy-de-Dôme, and Vaucluse. It is considered to be only by these means that this branch of French industry can defend itself against the competition and other adverse forces with which it has to cope.

FRANCE AND HER RIVALS IN THE SILK INDUSTRY.

French merchants complain bitterly of the pressure of foreign competition with the silk industry of France, alluded to at the close of the preceding note. The sewing silk department is alleged to have been half annihilated by the glazed cotton goods imported from England and Germany, and the important manufactures of St. Pierre-les-Calais are said to have had great difficulty in struggling against the factories of Nottingham. The intensity of foreign competition is shewn by the remarkable development of manufacturing in some of the neighbouring countries during recent years. The factories of the Rhine district, for instance, which had only 25,000 looms in 1844, had 87,000 in 1883, and the production rose within that period from 90,000,000 francs to 225,000,000 francs. The specialities made in these factories are cotton velvet, ribbons of silk-waste, and cotton fabrics of light silks. In Switzerland similar phenomena are presented. The looms of Zurich have increased from 9,000 to 37,000 during the last 30 years, and the production, which at the beginning of that period amounted only to 15,000,000 francs, reached 84,000,000 francs in 1885. Basle has made less startling progress, but even there the production has risen from 20,000,000 francs to 37,000,000. Italy, which has been so successful in sericulture, reeling, and throwing, has been less successful in weaving; nevertheless the number of its looms has trebled in 20 years, and it produces silks to the value of 40,000,000 francs, of a special kind, and which are beginning to come to Paris. Its chief weaving centres are Como, Genoa, and Turin. Russia is also one of the rivals of France in this field. In less than 10 years the looms of Moscow, St. Petersburg, and Vladimir have increased their production from 40,000,000 to 70,000,000f. America has already established a silk industry of its own, and from the opposite side of the world—Asia—danger is also foreseen. The foregoing jeremiade is the substance of an article in the *Revue des deux Mondes*. We have no doubt it has been published in that influential journal with a view to securing more

protection for the French silk manufacturers. The appetite for protection grows by what it feeds on, and like the daughter of the horse-leech it is perpetually crying out for more.

COTTON WASTE SPINNERS AND MANUFACTURERS.

The cotton waste spinners—that is, the hard waste section of them—are apparently doing or intending to do as many other traders do at this season of the year, namely, take stock of their position. We don't wonder at this, because for a number of years their lot has not been an enviable one. Their raw material may be regarded—to use a chemical phrase—as a by-product, it being the hard waste made in spinning mills and weaving sheds, and mainly in the latter. Nobody is interested in increasing the supply of this raw material, as it must be derived from an article costing from say three to five times as much—that is, cotton yarns. They never get any benefit from an abundant crop of cotton, as it does not increase their supply of the material, neither does a reduction in the values of 'spots' or 'futures' correspondingly lower their rates. Whilst this is their plight regarding their raw material, new and increasing demands for it are arising, bringing increased competition, and a consequential tendency for values to advance. It was not always thus, but then the old order changeth, giving place to the new, and the latter reminds one of the lot of the fish that jumped out of the frying-pan into the fire: it cannot be said that they have benefited themselves by the change. Even chloride of zinc and water hardly suffice to make the balance right. Cotton waste dealers and manufacturers affect the purlieus of the Victoria fruit and flower market, and it would appear that little coteries of them, depressed in spirit, have been discussing their prospects, and not finding them satisfactory for the coming year unless they take very decided steps to help themselves, they have as a first step thereto called a meeting — a common resource of Englishmen in a difficulty. It was a meeting of the Committee of their Association, which was held on Tuesday at the Bull's Head Hotel. The outcome was the passage of a resolution "that a general meeting of the trade be held at the above-named hotel on Tuesday the 23rd inst., to consider the present condition of the trade previous to contracts being placed for the coming year, and also to consider future ways or means of conducting the operations of the association so as to prove most beneficial to the trade generally." It may not be generally known that a different method of trading prevails in this branch of the cotton trade from that which is general in what may be termed the superior section. Manufacturers generally at the commencement of a year sell their waste by contract for six or twelve months, the buyer taking all they produce in that time. They have, therefore, to make their market in the first week or two of the year for the whole of it. Failing to do so they find themselves in a quandary, and for their supplies of the raw material they have to throw themselves upon the tender mercies of the waste dealers, which are said to be like those of certain personages named in Scripture, not kind. It would seem as if "the waste men" are disposed to rebel, and are about to enter into a league for the purpose of securing their supplies at their own price. If so, why should not manufacturers offer their production of waste for sale by tender? There could be no objection to this, and then the waste men would get it at their own price and be, we suppose, satisfied.

HOW COTTON TRADE DISPUTES ARE DEALT WITH AT OLDHAM.

Our Oldham correspondent writes: "Seeing that Oldham occupies so important a place in the spinning world, and now that greatness in the wages question is being thrust upon it, it may not be regarded by our readers as inopportune if we place before them a method which has of late been adopted in this noteworthy Lancashire town in connection with the settlement of grievances that the workpeople may have with their employers as to work and wages. We have previously intimated that the Oldham cotton operatives have obtained from employers the recognition of the right of labour to compensation for loss in wages caused by circumstances over which they have no control. We might here state that this has reference chiefly to bad spinning, through which the workmen contend they are harder worked, while at the same time receiving less wages. Employers, also, have allowed themselves to be penalised when it has been found that hands have been discharged without just cause, and have allowed themselves to be thus smitten rather than disturb the good relations with their workpeople. These two points, it will be readily admitted, are two distinct gains to the cause of labour. But the officials of the Operatives' Associations have not stopped here. They have made another further advance, and one which if carried out in a proper spirit will no doubt have the effect of preventing serious breaches between employer and employed, and must also lead to better understandings between capital and labour. The third point, therefore, that we wish to allude to is the adoption of a plan by which the grievances of workpeople are thoroughly thrashed out in the presence of all parties concerned. The usual *modus operandi* when operatives have any complaint as regards their work and earnings is, if they fail to obtain a redress by their own efforts, to report the same to the officials of their trade-union. The union officials then communicate with the millowner or limited company, as the case may be, and endeavour to obtain redress. Invariably it is now the case for employers in Oldham and district (both private spinners and spinning companies) to delegate such affairs to be dealt with on their behalf by the secretary of the Employers' Association. He and the operatives' official act as it were as umpires, and in this way settlements are come to which otherwise might result in complications. Should the firm, however, not carry out to the operatives' satisfaction the remedying of the complaints, recourse is again had to the employer, and an intimation is given that severe measures will be undertaken if an improvement be not brought about. It will thus be seen (imaginarily, of course,) that matters have now reached a crisis. Let us say, by way of parenthesis, that, so far as we learn, there is a strong disposition on the part of the trade-union officials to do everything possible to avoid a strike resulting. The new departure we allude to then goes a step further in the direction of peace. In several instances quite recently where differences of opinion have existed as to the nature of complaints conferences between those most interested have been held—namely, the employers, representatives of the operatives' trades-union, and a deputation from the workmen themselves. Thus the complaining parties are brought face to face with those who employ them, and in this way the whole of the facts are gone into, and methods propounded for making matters run smoother. By this means a number of grievances which threatened to lead to strikes have been removed, and it would appear that the end justified the means adopted. Of course in towns where the master element is more predominent than at Oldham the operatives will be unable to make such rapid advances. The directorates of the Oldham companies being largely composed of working-men has undoubtedly been greatly in the operatives' favour, and has materially helped in giving them a standing with capital. Still it can scarcely be alleged that the new procedure will in any way humble capital. Of course it must be granted that it is rather democratic in its tendency, but as we live in a truly democratic age capital readily bends in accordance with the times. It was Benjamin Franklin who said that by stopping a little we often missed many a hard knock. And so it is in this case, as by arguing with the workman on his complaint a better understanding would result, and increased confidence in each other lead to the benefit of both parties. Capital and labour are as essential to each other as any member of the human body is to complete the whole man, and so the rights of one another ought to be guarded as jealously as we would the most sacred tie which binds together the human family."

WEAVING AMONGST THE ANCIENT GERMANS.

The old Germans have often been thought of as barbarians, chiefly because most of our knowledge about them has come to us through Roman channels, and Roman civilisation has so strongly influenced European life and culture. If, however, we examine classical evidence very carefully and take into account also evidence from other sources, we see clearly that the ancient Teutons were in some respects very far indeed removed from barbarism. One department in which they seem to have excelled for ages was the production of textiles. Herr Fischbach has just called attention to a passage in the *Lysistrate* of Aristophanes, which shews that German textiles were known amongst the Greeks 2,300 years before the time of Christ, Grecian belles, it seems, endeavoured to increase the effect of their charms not only by wreaths of flowers, paint, slippers, and saffron-coloured robes, but also by veils or shawls of Cimbrian (German) make, which had probably been brought to Greece by the Phœnicians along with amber. Some centuries later Julius Cæsar spoke highly of the linen of the Atrebates, who dwelt in the country of Lüttich and Brussels. Later still Tacitus mentions the white garments decorated with red and blue embroidery, which were worn by the German women. Fischbach thinks it allowable to suppose that Flanders, which in more recent times produced such marvels of textile art, possessed fine weavers in very early ages. Ancient tombs have yielded but little, but still their evidence is by no means contemptible. A tomb at Witzmitz, near Regenwald, in Pomerania, dating from the third or fourth century B.C., contained a small piece of fine linen decorated with fine white embroidery. The clothes of Roman soldiers of the first or second century, which were found embedded in the moor in the neighbourhood of Mayence, must be regarded as of German manufacture, because they have the trill or Batavia border, obtained by means of the treadle-loom—a phenomenon not exhibited by Greek or Egyptian fabrics down to the fourth century. It came with the lift-loom from India, but the Germans were previously acquainted with the treadle-loom, and could produce small geometrical patterns. It is a noteworthy circumstance that Frisian linen has excelled in such small

patterns down to our own day. A fabric with such a border has been found in the Roman graves at Mayence. There are also many hints that during bad weather the Romans used to wear coarse fabrics imported from the North. These facts seem to justify Fischbach's contention that an independent school of weaving existed among the ancient Germans.

Articles.

COTTON OPERATIVES AND M.P.'s IN COUNCIL.

The Textile Factory Workers' Association Sub-committee on Wednesday last were in Council with several M.P.'s from Lancashire regarding the amendments they want to have introduced into the Factory Acts. It will be remembered that last year we discussed these *seriatim*, pointing out the unreasonable nature of some and the absurdity of others. In order to facilitate the passage of the bill, a conference of employers and operatives in conjunction with the members who were relied upon to push the bill through the House of Commons was held, and the subject debated at considerable length. In the end the most obnoxious proposals were withdrawn simply because it was seen that they were utterly indefensible, as was shewn by the fact that not one of the operatives' delegates, nor the eminent lawyer whose services in their support they have secured, could offer a single argument that could be sustained in their favour. We need not trace the bill further; ultimately it became one of the blighted blossoms of legislation, giving promise of fruit but yielding none. On the 22nd ult., Sir Henry James reintroduced this bill, or perhaps it would be more correct to say a dummy substitute, which was read a first time. Sir Henry has been further successful in securing an early date for its second reading, which has been set down for February 18th. We desire to draw the attention of the trade to the unfair tactics that are being adopted by the promoters of these mischievous proposals. Last year it was thought fit, and everybody agreed with the suggestion, to call a united conference of employers and employed in order to consider the details of the bill and if possible to agree upon them so that the measure might pass unopposed. In the present instance the consultation was held on Wednesday last, but the employers were not invited to send their representatives. We should have thought that common courtesy alone would have dictated this, and if the operatives were wanting in this quality it might have been suggested to them by Sir Henry James. We, however, have no reason to think that it was suggested. Sir Henry, indeed, seems to have forgotten a very important fact, namely, that his connection with Lancashire exists by favour of the constituency of Bury, and that this constituency includes other interests than those of the members of the Textile Factory Workers' Association. The real motive, however, of the omission of the invitation was that an opportunity might be secured of smuggling into the bill the abandoned proposal brought forward last year, namely, —that of the clause compelling manufacturers to give to the operatives full particulars of all the kinds of cloth they make, including details as to the number of ends in warp, length of dry twist, counts of weft, counts of twist, reed, and pick, and other technical particulars. This proposal they utterly failed to justify last year, and accordingly withdrew it.

How any sane man possessing the knowledge of textile matters that Mr. Birtwistle may justly claim could bring himself to further such a proposal exceeds our capacity to comprehend. We don't reckon the opinion of the other operative delegates as of weight in this connection, it being nothing more than that of the man in the street. What have the operatives got to do with the number of threads in the warp, the length of dry twist, and many other of the technical details they ask for? What concerns them is the width, length, counts of reed, and counts of yarn when the piece of cloth is placed upon the counter. Really they are making demands here which would at once betray their whole trade into the hands of foreign competitors, and provide by English law for the benefit of foreigners the very knowledge they are so anxious to obtain in order to become competitors with us. Does Mr. Birtwistle not know that on the acquisition of this knowledge the United States Government has spent thousands of dollars through its consuls, and has, very properly, failed? Does he not know that having thus failed it is now trying on another dodge to effect the same purpose, namely, that invoices of goods exported to the States shall contain the particulars for which he is asking? We hardly thought he would have shewn such want of enlightenment regarding the interests of the cotton trade, and not least of those of his own clients, as he exhibits when putting forward proposals of this kind. The operatives' organ of yesterday, referring to the conference, says :—

> The employers had not been asked to be present as the operatives' representatives have found it impossible to get them to agree to what they (the operatives) considered a fair bill. This, for many reasons, is a regrettable circumstance, as it would have much facilitated the passage of such a bill had it been unopposed. We believe the employers are pursuing a mistaken policy in objecting to law-breakers being adequately punished, as it only makes the operatives think that they and their employers are of necessity in opposite camps.

This is the sort of bill which is called a fair bill, made up of clauses such as we have drawn attention to. The employers last year introduced a clause enabling them to repudiate the responsibility for infractions of the law by the operatives when the mill engine was not at work. Who resisted this? Was it not Mr. Birtwistle and his co-delegates? We think it was. Employers want the law breakers to be adequately punished whether they are found in the ranks of the employers or in those of the operatives. What they object to—and very properly so—is to be punished vicariously for the law-breaking of Mr. Birtwistle's clients. We shall probably have further observations to offer upon this subject at an early date.

FOREIGN TARIFFS AND LABOUR QUESTIONS.

News of an important event that throws a flood of light upon the position of employers in a certain trade has reached us since the publication of our last issue. Messrs. Lister and Co., Limited, have notified the workpeople in a portion of the velvet department at Manningham mills, numbering about 1,100 persons, that their wages will be reduced next week to what the directors state will be rates similar to or a little above those which are paid by the principal Bradford firms. In an interview with delegates from the various classes of operatives affected, Mr. Reixach, managing director, said that the concern of Lister and Co., Limited, could only be carried on under the same conditions as those under which other Bradford manufacturers worked. The McKinley Tariff had stopped the trade of Lister and Co. in America entirely, and the Germans were competing with them in home markets more strongly than ever. In addition, the proposed new French Tariff threatened to seriously increase the duty on plush. The operatives have not yet decided as to what course of action they will adopt, but it is probable that a struggle will take place before they decide to accept their employers' terms. That is a matter which concerns the men. Of this, however, we may be tolerably certain: the plush trade to-day is not such an easy-going business as it was in the early period of its history, when Samuel Cunliffe Lister had things pretty much to himself, could ask what prices he pleased for his productions, and could afford to pay good wages to his operatives. The business is now competed for very keenly by such powerful concerns as the Salts, Brights, Walkers, Hinds, and others. Foreign tariffs, too, have undoubtedly tended to drive our manufacturers into a corner, so that Messrs. Lister will have strong arguments to bring forward in support of their decision. The opportunity is, too, a splendid one for impressing the voters of the country with the fact that unrestricted free trade at home and protection abroad may after all not be an unmixed blessing for them, and Mr. Lister, whose fair trade views are well known, and other fair traders, will be quite within their right in sharply emphasising the fact in such a forcible manner. We have repeatedly in these columns furnished illustrations of the great changes which have been brought about in the position occupied by us in relation to our foreign competitors, and we have shewn again and again, by giving practical illustrations gathered from the experience of those interested in almost every department of British industry, how vitally these foreign tariffs are affecting us.

It is useless to reply that by the imposition of tariffs foreigners are simply taxing themselves. This is quite true, but it is not a full statement of the facts. If they continued to buy the same quantity of goods of foreign manufacture as before, the case would be different and the reply unanswerable. But it greatly reduces their purchase and consumption of such goods, and to that extent throws both the capital and labour hitherto devoted in their manufacture out of employ, thereby inflicting an appreciable injury upon the country whose manufactures are displaced. It is this phase of the subject that imperatively demands our attention and close investigation. Commercial intercourse between nations is not regulated by moral principles, and it is incumbent upon our Government to see that our interests as an industrial and commercial nation are not injured by the desperate raids of such countries as the United States, France, and Germany upon them.

Messrs. Lister and Co. have been compelled to recognise by decisive action the altered aspects of the case as it affects themselves. Whenever any fresh line of manufacture has been started the hands have been able to fix what in time proved a fancy wage. As far as the plush trade is concerned—and the same thing happens in all such instances—the work of the operatives has become easier, the new goods have become common, and prices have fallen. But the wages remain at the original figure. How then, ask Messrs. Lister, in effect, can the business be made to pay? While there has been a monopoly of certain manufactures and plenty of orders the wages have not been reduced, but now the time has come when the management cannot afford to pay such wages, and having ascertained what is being paid by other firms in Bradford,

reductions have been decided upon which will bring the wages paid in the velvet department of Lister and Co. to figures that are generally the same or a little higher than those paid by the best Bradford firms. If the hands decline to accept the lower rate of wages proposed, the directors intend to close the department until such time as the rate of wages can be agreed upon, and this time of year, being between the seasons, is peculiarly adapted for such a re-arrangement.

We have no wish to enlarge upon this matter in the present stage of what has hardly yet become a dispute. But in a general way it may be remarked that these reductions are inevitable in the present condition of things. The life of England is her commerce—that is, her foreign trade. That trade, as we have shewn, is being steadily and successfully attacked, not by one, or two, or three, but by every civilized nation in the world, with the exception of a few of the sparsely peopled Australian colonies. And yet when new and more stringent tariffs are proposed, any attempt to obtain an enquiry is resented as if it would imperil the whole system of our commercial policy, which is not the case. Now that the working men of the country are threatened with a reduction in their incomes, owing to the unfair tariffs imposed upon British goods abroad, they may be induced to take an intelligent interest in the question, and support the demand for an investigation. Such a course would prove far more profitable to them than many subjects to which they give attention.

Leaving this important subject, we turn to another current aspect of the labour question, this time abroad. Last week a delegation of Tourcoing millowners and working-men representatives was received by the French Board of Trade in order to submit their respective schemes for eliminating the differences between capital and labour set forth so prominently this year by the Roubaix-Tourcoing strikes. The employers urge that it is necessary, firstly, to come to some understanding with Germany to institute a ten hours working day; secondly, that night labour be abolished; thirdly, that a local Government inspector be nominated, with power to grant overtime permissions when it may be deemed advisable, and to ensure the proper working of the Labour Bill. The working-men representatives advocate, firstly, the suppression of night labour; secondly, a ten hours working day, or even an eight hours day, if other Powers will promise to adopt the same course at once; thirdly, a rise of from 10 to 15 per cent. in wages; fourthly, that no foreigner be employed in French mills; fifthly, that overtime be authorised by an inspector, appointed by the working-men's syndicate, only when accidental stoppages have occurred. As the parties still disagree upon certain points, the Board of Trade intend to consider their claims individually, and decide what steps ought to be taken to call the attention of the Legislature to the importance of the labour problem and its solution. It is a fact well worth the notice of manufacturers here that their French competitors should have taken up the question of hours of labour. It is necessary, however, to point out that this country cannot submit itself to the operation of any international arrangement on the subject so long as operatives here work less hours and get better wages than those on the Continent. Whether the French and Germans will consent to compete on fair terms is open to question. In any case, the decision of the French Board of Trade will be awaited with interest.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

ENGLISH *v.* AMERICAN CARDING.—AMERICAN TEXTILES OF SEVENTY YEARS AGO.—JAY GOULD'S GIGANTIC MONOPOLY.

NEW YORK, NOV. 29TH.

There is not much being done by importers just now. The tendency of prices continues to be upwards, and there is a general disposition to charge in all cases the full additions imposed by the tariff. Retailers are transacting a very heavy trade, as is usual at this season, and the orders placed with wholesale firms are quite up to the average.

A patent has just been issued to Mr. Schaum, of Schaum and Uhlinger, No. 440,370, dated November 11th, 1890, referring to a "glass beam bracket for looms for weaving silk ribbons." The peculiar advantage of the bracket is that it is adjustable without any trouble whatever, and is to supersede the old style wooden glass and breast beam bracket on the ribbon looms. Where the old bracket is used it is necessary to remove several wood screws and bore new holes in the glass beam and breast beam, and move the bracket along to the proper place. By the use of this bracket it is only necessary to loosen one thumbscrew on the bottom and move the bracket along to the desired place. It will not require any more time to adjust the brackets for the entire loom by the use of this new bracket than it would to adjust a single bracket of the old style.

Handkerchief houses on your side will be interested to know that Mr. Thomas O'Neil, formerly a salesman with Messrs. T. Hood, Foulkrod and Co., is now identified with the new firm of H. and T. H. O'Neil, importers of embroideries, handkerchiefs, etc., 72, Green-street, New York.

It is now admitted by practical men that English cards have grown into favour in this country. Five years ago there were probably only a few hundred English cards, of the large make, in the country; to-day there cannot be much less than 5,000. If these average 800 pounds per week, the whole product will amount to 10,000 bales per week (400 pounds each). Such progress as this shews that there are a large number of very influential believers in English cards. One large field of operation for these cards has remained so far untouched. For some reason many carders and superintendents have almost taken it for granted that for double carding the old American system is the only possible way of doing this. Very few have ever tried double carding on English cards. A writer in *Fibre and Fabric* advises their trial. "I often hear it said," he remarks, "that there is no double carding done in England on revolving flat cards. That I believe is quite true, and yet a large portion of the very best celebrated Bolton yarns, Nos. 50, 60, 70, is single carded. How is it done? First of all, cards in America with United States duty cost 50 per cent. more than in England, and they card probably 50 per cent. more here than in England. Second, for these counts English spinners use Egyptian cotton, which has its own peculiarities, but it is very easy to card compared to the irregular nippy 'Peeler,' 'Allen,' and long Texas cottons in use in New England for the same counts of yarn. It is therefore easy to see that by using cotton 30 per cent. more difficult to card, and carding say even 30 per cent. more than is done with Egyptian cotton in England, the difficulty of getting a good result is very obvious. I believe for superior fine yarns, 50, 60, 70, 80, uncombed, that double carding is absolutely necessary when using the native cottons referred to, and to do this successfully, there are no cards made that will accomplish a larger quantity and better quality than the English revolving flat cards, and I recommend your very intelligent writers on this subject, who are evidently practical men and desirous to arrive at the best solution of all mill problems, to try this experiment, to carry it entirely separately through into yarn, and I am sure they will admit that they had little conception of the capability of revolving flat cards in the direction of double carding. For carrying out this system an English Derby doubler is required, but the experiment can easily be made in many different ways for a trial, that will be suggested to the mind of any intelligent carder."

A correspondent of the *Times* of this city had some interesting remarks to make recently on the prices of clothing in the United States in the early years of the country's history. If land were high in the old days compared with prices obtaining at present, other things were cheap. Clothing certainly had no fancy values put upon it when it came into the hands of the appraisers of estates. Here is the sample list of the personal decorations of a prosperous farmer who died not far from 1812:—

	s.	d.
1 pair buckskin breeches	1	0
1 bottle-green coat	6	0
1 vest	0	8½
1 great coat	3	0

About 1820 there died a woman, among whose effects were the following:—One 'dimity petticoat,' valued at 1s. 5d.; 'ribbons,' worth 3d.; a pair of morocco shoes, worth 3s., and a pair of coarse, valued at 1s. 5d. The lady's umbrella was worth 17 cents. In another list a 'calico gound' was put at 34 cents, a petticoat at 75 cents, and a blue flannel gown at 1 dol. The quilt habit evidently had many victims in those good old days. Quilts were plenty. One administrator found that he was called upon to look after the estate of a person who had died possessed of eleven of these protectors against winter draughts. Modern quilt-makers may be pleased to know that the lot of eleven was worth 9 dols. 89 cents in the year of grace 1821. Some of the entries as to male attire are as follows:—One blue pantaloon, 1 dol. 50 cents; one pair pantaloons, 75 cents; one pair short breeches, 33 cents; "one plain cheast" to keep things in was worth 12 cents.

It would be difficult in such a aristocratic country as England for any one man to acquire such vast power as that now possessed by little Jay Gould. Business men in Great Britain would not for a moment tolerate such a monopoly as that implied say by the union under one control of the North-Western, Midland, Great Northern, Great Western, and other trunk lines. In this country, however, the public are at the mercy of Goulds, Vanderbilts, and other men of a similar stamp, whose existence is a greater drawback to the welfare of the nation at large than a whole army of the blue-blooded peers for whom Americans profess to entertain such feelings of profound contempt. By clever manipulation of the vast funds at his disposal Gould has now obtained control of the lines of traffic between the East-coast of China and the Atlantic seaboard of the United States. He controls the Pacific Mail Steamship Company, of which his son George has been elected president; has a commanding voice in the Northern Pacific, Union Pacific, the Southern Pacific, and, in fact, all the trans-Continental railroads. The country is at his mercy, and he can juggle with its interests as he pleases. Fortunately for European shippers who desire to utilise the North American route for Asiatic shipments there is still the Canadian Pacific route in British territory, over which the Little Wizard's malign influence has not been cast.

Designing.

NEW DESIGNS.

REVERSIBLE SATINS.

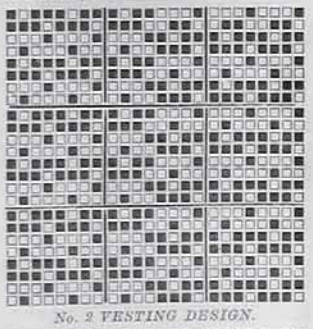
This design is a suggestion, and may be applied to a variety of cloths. It is a perfect five-end satin on ten ends, warped end and end, of any colours, thus producing an equal surface finish on each side of two distinct colours. The weft may be any colour, seeing it is almost buried, or as nearly as possible out of sight; for rugs, mauds, shawls, and many other fabrics it

will be found a neat and appropriate method of combining colours which contrast and harmonise, because the shades or tints may be made to change places either in solid or broken patches, and all changes in this way can be very easily effected in the warping pattern; an infinite amount of stripes in combination with plain or figured ones can be produced, and it will be found serviceable for shawl borders. A very simple one is given herewith, merely as an illustration; say body of shawl end and end of black and white, one side would be all black, the other side white; by reversing the order of warping for the borders, the black side would have a solid border of white, and the white side a solid border of black. From this it will at once be seen how the changes are obtained in a cheap expeditious manner, and at the same time without requiring any great amount of skill.

SPRING VESTINGS.

This design is extremely simple, being reducible to 4 shafts, 24 to the round (see pegging plan). A very suitable, pretty, and neat cloth for vestings may be made by using a 30 reed, 4 in a dent, or 120 ends per inch; a 60 reed 2 in a dent would give a better appearance to the cloth, although the former reed is more convenient; two-fold 40's twist for warp and 12's single weft, 60 picks per inch. These quantities can be varied according as heavy, medium, or light cloths are required, though ranges in the three classes would be very desirable. The following colourings for warps are enquired about, and likely to be in favour:—

No. 1.—4 black, 4 white, 4 slate, 4 white, 4 slate, 4 white, 4 slate: 28 ends warped double, two in a heald, two healds in a dent.



No. 2 VESTING DESIGN.

No. 1. PEGGING PLAN.

No. 2.—4 brown, 4 light straw, 4 lavender, 4 light straw, 4 lavender, 4 light straw, 4 lavender. This pattern is also 28 ends, all doubled as in *No. 1*. It will readily be seen how varieties may be obtained and the size of a pattern increased by enlarging the warp pattern and the round; the weft also may be changed from black to any dark shade.

A very light make of this design would be effective for linen dress goods. Take *No. 1* pattern in a 40 reed 2 in a dent, or 80 ends per inch of 60's linen for warp and 30 linen or tow weft with 40 picks. *No. 2* pattern with a two-fold yarn of blue and orange twist in place of light straw would give a very satisfactory result.

NOVELTIES IN LOW WOOLLENS AND WORSTEDS.

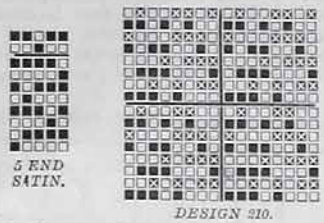
In our last issue endeavours were made to suggest novelties obtained by modifications of the methods of backing worsteds in general use. This week we direct attention to the production of novelties by the use of cotton warp and woollen, worsted, and mohair wefts, either combined or separate; and in order to satisfy the requirements of those who have asked for suggestions in this direction, our remarks shall be confined to shaft work.

Design 209 demonstrates as simply as possible the method of using a cotton warp and two better class wefts, these latter covering entirely the cotton warp both back and face, and yet producing a small shaded effect which will of necessity be developed on both back and face of the cloths, since these effects are practically reversibles.

Now it will be observed that in this design four, three, and two threads respectively, work together throughout the piece. This may be objectionable owing to the threads failing always together to retain their relative positions, and therefore it is often deemed advisable to bind such threads into position, at the same time producing a firmer cloth.

Design 210 demonstrates one method of effecting this, a flush of more than three being avoided, and one of the four threads producing each stripe being up each pick, thus preventing any wrapping over.

It will at once be perceived that if either of these designs be wefted 1 pick dark, 1 pick light, or 1 pick woollen, 1 pick mohair, stripes of light and dark or of woollen and mohair will appear both back and face. On this system



5 END SATIN.

DESIGN 210.

both the succeeding designs are intended to be developed.

Design 211 practically consists of two portions, viz., a twill and a stripe effect. The twill effect may of course be used alone, and may be extended as required, using the principle demonstrated in *Design 210*.

The following is a suitable sett:—

Warp.
All 2/40's cotton.
24's reed 2's.
Weft.
20 sk. woollen,

or, as a finer worsted sett:—

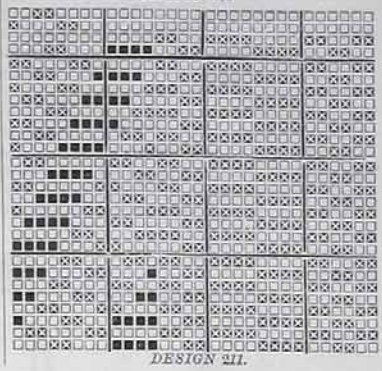
Warp.
All 2/60's cotton.
32's reed 2's.
Weft.
20's worsted.

If a lustrous effect is desired, 15's—20's mohair may be used.

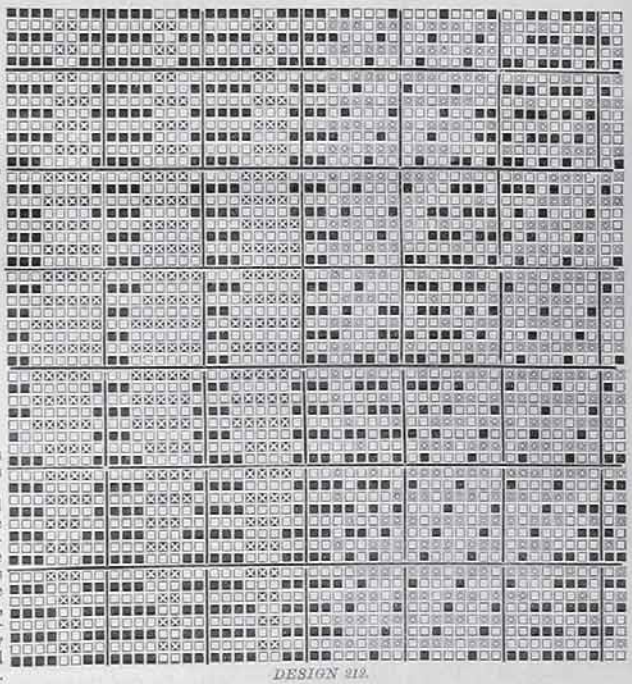
Design 212 is a novel effect, that may be developed with comparatively little trouble. It consists of a figured stripe effect on 8 threads, which may be developed any breadth by drafting, and a twill effect on 24 threads. As the design is given here 32 shafts are required for its production, but if the twill effect be brought on to 12 threads, then only 20 shafts are required, as indicated in the draft. There is a fault, however, in this design which may require correcting, namely, that owing to the peculiar form of the eight-end stripe, there is the likelihood of bars being developed across the piece, unless the stripe effect lengthways be strong enough to counteract this tendency. If, however, the similar effect in the next stripe be made to oppose the first, all tendency to show bars will be avoided.

Cotton warp and mohair and woollen weft will produce an effective pattern in this case.

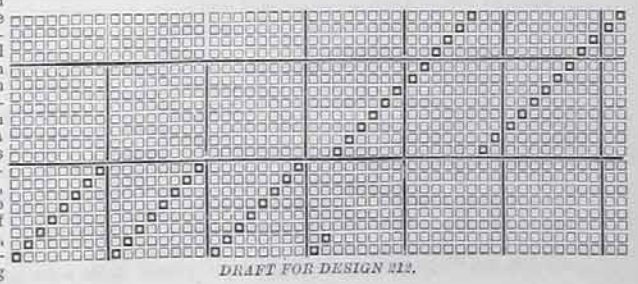
DESIGN 209.



DESIGN 211.



DESIGN 212.



DRAFT FOR DESIGN 212.

Machinery and Appliances.

IMPROVED COTTON COMBER.

MESSRS. DOBSON AND BARLOW, BOLTON.

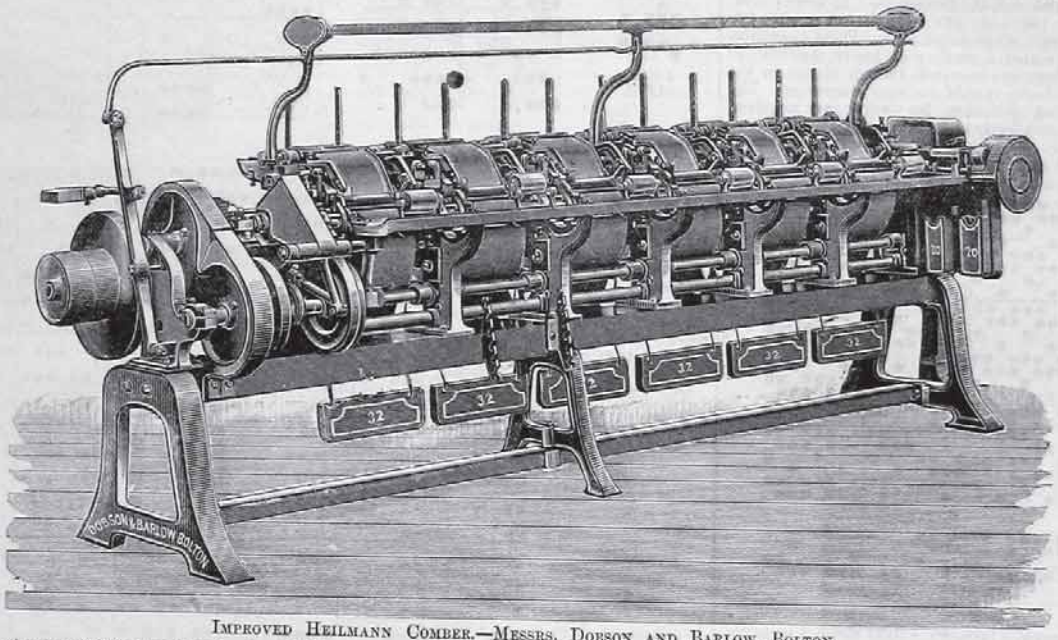
Perhaps the most impressive feature in connection with the cotton trade and the one which excites most amazement in a thoughtful mind is its possession of such a perfect series of machines, and each of these so perfect in itself. In every process manual power has been superseded by the creation of the inventor's genius, and in each the product of the machine, both in quality and quantity, far excels the average results of manual work. The transformation of the manual to the mechanical form is now complete. We have ceased to look for inventions that will revolutionise the trade, because the failure of any professing to achieve such results would be foredoomed, as they would have to destroy the capital already inextricably invested in it. They must run upon the lines already adopted if they are to meet with a favourable reception. The efforts of inventors in the cotton trade are therefore of necessity confined to improving and perfecting the details of existing machines. This, it will be seen, does not leave much scope for achieving great results, but still we are now and again surprised with an improvement that relatively speaking accomplishes surprising things. The improved Heilmann Comber, just completed by Messrs. Dobson and Barlow, and to which we wish to direct the attention of our readers, is unquestionably one of these inventions.

The processes of cotton spinning may be roughly divided into two groups, the preparatory and the constructive sections. The first consists of the opening and cleansing operations, during the latter of which it is also endeavoured to arrange the fibres in the necessary parallel order. In the earliest passages the matted cotton is opened and the grosser impurities extracted. In the carding process, short, immature, and otherwise imperfect fibre is removed, and at this point, in the bulk of the trade, the cleansing is held to have been completed. In the fine spinning section, however, which is carried on at Manchester, Bolton Reddish, Stalybridge, Chorley, Tyldesley, and a few other smaller centres, the cleansing process is carried a step further by the removal of all fibres from the cotton below a certain standard in length, this varying according to the quality or fineness of the yarn required. Were any person, unfamiliar with the processes of cotton spinning, to be shewn the lap of cotton as it comes from the finisher, and told it was necessary that every fibre shorter than a standard would have to be extracted from the others, he would either deny the possibility of its accomplishment or have his faculty of wonder greatly excited. But, as is well known, this is easily accomplished by the combing machine.

The combing machine is of comparatively recent introduction, having been invented by Josué Heilmann, of Mulhouse, one of the Continental centres of the cotton trade, about the year 1846. For several years it attracted comparatively little notice, and it was not until the great Exhibition of 1851 that it came fairly under the notice of English spinners. The patent rights for this country were soon after acquired, and its manufacture was commenced. The machine was very successful, and was extensively adopted. After the patent rights had expired its manufacture was commenced by a number of machinists, who endeavoured to improve and simplify its very complex details.

Amongst the firms who soon gained a leading repute for the excellence of their Heilmann comber—as the machine had come to be known—were Messrs. Dobson and Barlow, of Bolton. Seated in the leading centre of the fine-spinning trade they soon became familiar with both its merits and defects. Amongst the chief of the latter was its great complexity and the number of its parts. Bringing the resources of the mechanical skill of their establishment to bear upon it, they speedily simplified and improved it. In this form the firm exhibited it at the Paris Exhibition of 1878, where it attracted considerable attention. The efforts previously made have been continued since in relation to the improvement of smaller details, and with very satisfactory results. It has been reserved, however, for the present year to witness the realisation of, perhaps, the most important advance that has been made in the construction of the comber since its first invention. It is to this we wish to direct the attention of our readers on the present occasion.

For the purpose of this article it is not necessary to go into the details of the construction of the combing machine beyond giving the merest outline necessary to enable the reader to follow the description. Our illustration, Fig. 1, gives a view of the general appearance of the machine as constructed by Messrs. Dobson and Barlow, whilst Fig. 2 shews a section through the working parts, exhibiting the improvement recently made. As in the ordinary construction of the comber, so also in this the lap is placed upon rollers, which by their revolution slowly unroll the fleece, and deliver it to the guide plate, down which it passes to the pair of fluted steel feed rollers, which have an intermittent movement, turning from one-sixteenth to one-twelfth of a revolution in each. These deliver the sliver to the nippers, which open as shewn in the illustration to permit its passage. These nippers are constructed in the firm's usual manner, in which there is neither cloth nor leather upon the cushion plate, the cushion being fitted upon the knife instead of the plate. The blade is actuated by the cam through the connections shewn. There are many interesting points about this part of the mechanism, but it is not necessary for the present purpose to notice them. The nipper, having got its charge of cotton, holds it in a position where it is subjected to the action of the combing cylinder. After the comb has passed through the cotton thus firmly held for the purpose, the combed lock in the nipper, from which the short fibres have now been removed, is delivered to the detaching roller, the lower of the three rollers triangularly arranged, and the fluted section of the cylinder, which has in the meantime advanced to the position. It is next passed through a trumpet-shaped tube, in which it is

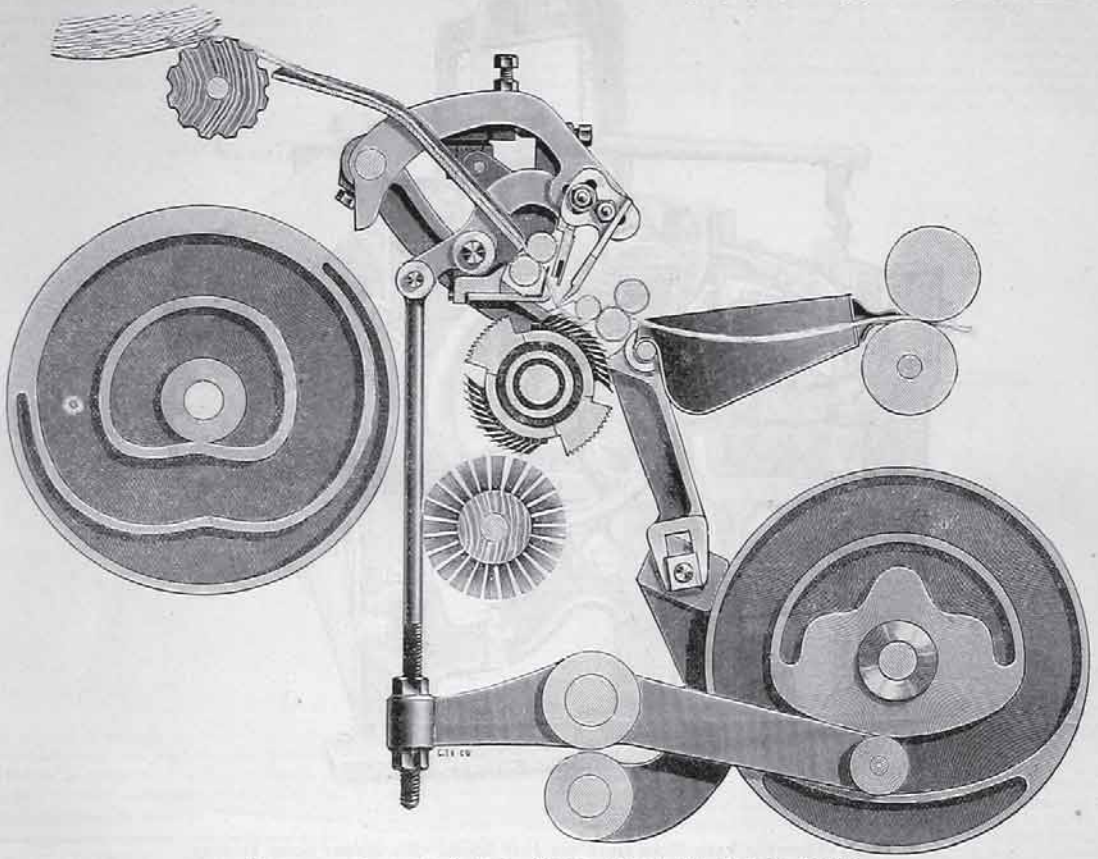


IMPROVED HEILMANN COMBER.—MESSRS. DOBSON AND BARLOW, BOLTON.

condensed, thence through the compression rollers shewn, and is finally delivered as combed sliver. We have now said enough to enable the reader to follow the cotton in its passage, and in the description have passed over without remark the improvement that has been introduced. We now turn to it.

The great change and improvement Messrs. Dobson and Barlow have made is in the combing cylinder. Up to the present this cylinder has, we believe, invariably possessed only one series of combs and one fluted segment. Thus it required one complete revolution of the cylinder to get one combed length of fibre. The speed at which the comber is ordinarily worked is from 65 revolutions with sea islands cotton to 85 revolutions per minute with Egyptian cottons when they are driven hard. These give an equal number of what are termed 'nips' in the same time. In this plan a considerable proportion of the periphery of the cylinder was, and is now, perfectly idle. The question was therefore asked, perhaps not for the first time—could this not be utilised? As a fact we believe attempts have previously been made to do it, but from one cause or another they have been unsuccessful. Messrs. Dobson and Barlow, however, have been more fortunate. From a careful inspection made into the working of the improvement under notice, we believe they have been perfectly successful in the attempt to introduce a second series of combs and a corresponding second fluted section. The importance of this will at once be obvious. If the cylinder were maintained at its usual speed it will be apparent that the production would be doubled, but as the higher speeds mentioned are known not to yield the best results, it is preferred to reduce the speed and to be content with the large gain still accruing. As ordinarily worked both cam and cylinder shafts are geared by wheels of 80 teeth into 80, but in the change which has been made the 80 wheel on the cam shaft has been replaced by one of 40, thus giving the cam shaft double speed and thereby enabling the nippers to perform the extra work required from them. The speed of the cylinder shaft has been reduced to 60 revolutions per minute, entailing a corresponding reduction in the speed of all the working parts actuated by it, which means something appreciable in wear and tear and power in a mill containing a considerable number of combers. At the same time 120 nips per minute are obtained, as against 80 with the comber running at the most usual speed. This shews a clear gain of 50 per cent. in the production, with equally good quality—or rather as we shall shew with better—whilst the surface speed of the cylinder is reduced 25 per cent. For sea islands cotton, when the ordinary comber runs at a speed of 65 revolutions of the cylinder per minute, making the same number of nips, in the improved arrangement with the cylinder running at 60 revolutions, making 120 nips, the gain is 84·5 per cent. in the production, with 8·3 less speed of cylinder, which are two great advantages.

The important change we have just described, as might be expected, has permitted several subsidiary improvements, only less material than itself, to be made. One of these is the improved arrangement of the needles in the comb upon the cylinder. Ordinarily these contained 17 strips, with needles of varying fineness, and arranged in various gauges, beginning with the coarsest and ending with the finest This arrangement typically represents the breaker, the intermediate, and the finisher card in the carding system, performing in the comber exactly the same function. The needle points range 20 to 85 per inch. In the aggregate the 17 strips contain 7,500 points in the ordinary arrangement. In the improved arrangement the number of strips has been reduced to 13, while, with the diminished surface speed of the cylinder, it has been found that the coarsest series of pins can be dispensed with. Beginning with finer pins more closely set, as many points are got into the thirteen strips as previously into the seventeen. For obtaining a high quality of work this is a decided advantage. Any one who has ever seen a filament of cotton under the microscope knows that its surface is covered with a fine vegetable wax, giving it a rich, pearly, and beautifully lustrous appearance, which it is the desire of the spinner who knows his business to preserve from injury throughout every passage to the completed yarn. The more perfectly he can accomplish this the better will be the price obtained in the market for his yarn. As the combing is effected by the needles of which we have spoken, and as the finest and most highly polished of these ever turned out from Redditch or any other centre of production, when placed alongside and contrasted with the beautiful handiwork of nature



SECTION OF IMPROVED COMBER.—MESSRS. DOBSON AND BARLOW, BOLTON.

as seen in the cotton filament, is in comparison a coarse rough bar of iron, it will be clear that the finer and more perfectly finished these needles are, the less likely are they to lacerate the pearly surfaces of the cotton filaments. The greater fineness of the needles and the reduction of the speed at which they are drawn through the sheet of the lap combine to produce a more satisfactory result than can easily be otherwise obtained.

There are several other improvements, but these do not call for extended notice. The detaching roller, by an improved arrangement, has had its movement reduced from ⅝ths of a revolution in each stroke to about one half. This has been effected by a reduction of the size of the quadrant cam. Another important gain is that the quadrant has been rendered stationary, whilst the clutch wheels go in and out of gear, thus making it impossible for the detaching roller to move either backwards or forwards beyond the throw to which it is set, thus guaranteeing a perfect and uniform piecing at every stroke, no matter at what speed the comber may be working.

It only remains for us to point out a few of the advantages to be gained from this, the most important improvement made in the comber since its original invention. The first is the greatly increased production, which may be set down on an average at probably 60 per cent.; secondly, the reduced capital that will be necessary in furnishing a mill with this class of machine; thirdly, the saving of space; fourthly, the better quality of work obtained from it; and last, but not least, the great saving in wages that will result, as the improved machine requires no more labour. Existing Heilmann combers can easily and cheaply have this invention applied. We need only add that the makers will be pleased to afford any further information that may be desired.

NEW PATENT YARN BEAM DRAG FOR JUTE LOOMS.

There has just been introduced into the jute manufacture, a new invention for regulating the tension of the warp in the loom with greater perfectness and facility than has hitherto been the case. It is the invention of Mr. Robert Scott, of the firm of Messrs. Scott and Fyffe, manufacturers, Dundee.

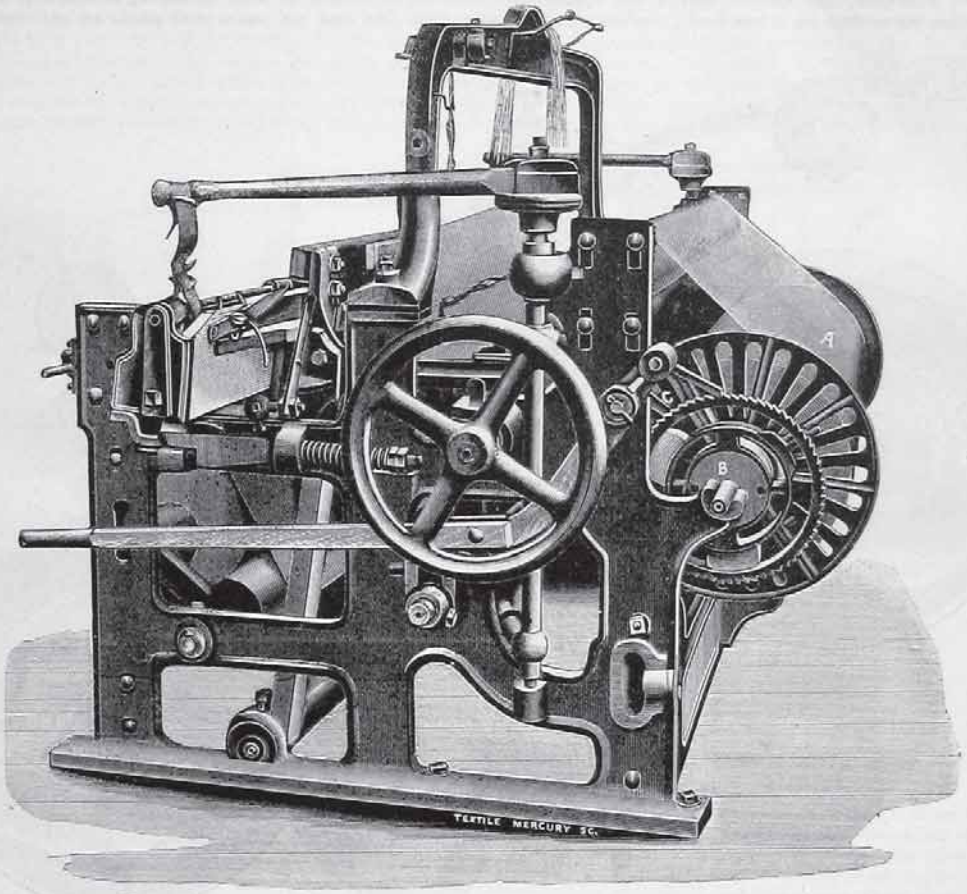


Fig. 1.—Improved Yarn Beam Drag for Jute Looms.—Mr. Robert Scott, Dundee.

The new appliance is illustrated herewith in both its detail and its application. In Fig. 1 is shewn the beam A, as ordinarily made, excepting that on the ends there will be observed projecting pins or keys, which are either attached to old beams or constructed upon new ones made specially with the view of having this invention applied. The small double ring B in the centre constitutes a tube, which is passed upon the neck of the beam and is held by the projecting pins just mentioned. On the right hand, and leaned against the beam, is a second ring or tube C, to the inner face of which three blocks of hard wood are securely attached. Upon the outer surface or periphery of this tube is cast a ratchet wheel, the use of which will be obvious before we have proceeded much further in our description. On the left hand of the figure and leaned against the beam is shewn the new appliance, D, put together. It will be seen here that the wood blocks of the ring C come in contact with the periphery of the ring B. They form in fact by their conjoint action a triple brake, and brake the revolution of the beam in the loom precisely as the clogs of ordinary brakes retard the revolution of a carriage wheel. To one of the wood blocks is attached an adjusting screw by which the force of the brake power is easily applied to a nicety. On the second beam E, presenting its end view to the observer, the appliance is seen properly mounted in its position upon the beam neck.

The beam, having been filled with a warp, is put into the loom as shewn in Fig. 2. To the side of the loom fra me a strong bracket is attached, which carries a small catch that, dropping into the teeth of the ratchet on the periphery of the brake, prevents the revolution of the latter whilst the loom is working. The draught of the working loom upon the warp has to overcome the resistance offered by the brake power, and as this can be perfectly regulated by the governing screw, it will be seen that a proper adjustment of the two forces can easily be attained. As the beam diminishes in diameter, the pressure of the brake is reduced proportionately by the adjusting screw.

The first obvious advantage is that the new invention dispenses with all the cumbrous parts of the old arrangement—levers, weights, chains, etc., thus divesting the loom of from 1 to 2½ cwt. of metal, by which a great deal more space

is given behind the looms. The second improvement attained is in the relief it affords to the weaver, who in the frequent necessity of turning back her beam, in which she had to overcome the resistance of the heavy tension weights just referred to, is by this invention relieved from the great strain which this causes in the old arrangement. Should the loom make several picks or throws after the weft is exhausted, or should the weaver have to "pull back" or unweave a fault, all she will have to do with the new arrangement in order to get a proper tension upon her warp will be to turn back the beam by the flange—which any child could do in a moment—and the catch will at once retain it in the position to which it has been returned. This will save a great deal of labour to the weaver, and we have no doubt it will prove a highly acceptable arrangement. It will also save much time and thereby increase the production. Further, the quality will be greatly improved, as the cloth will be made much more evenly than before, and will finish better and with less waste.

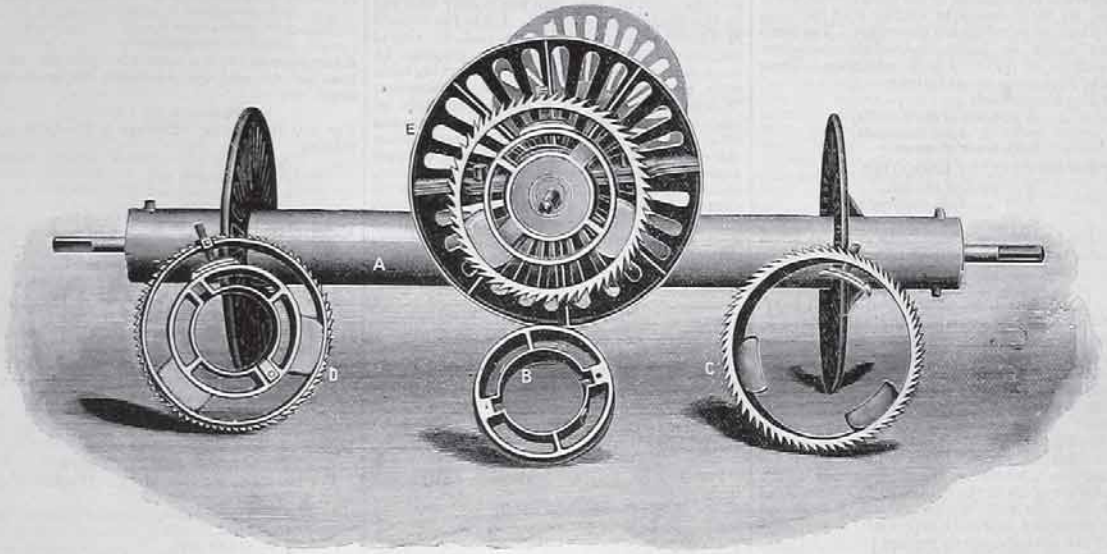


Fig. 2. Detail of Improved Drag.—Mr. Robert Scott, Dundee.

The invention, we are informed, has given every satisfaction in work in the establishment of the inventor, who will be pleased to afford any further information that may be desired on application as above.

Bleaching, Dyeing, Printing, etc.

CHROMIUM MORDANTS IN COTTON DYEING.

The bichromates of potash and soda are used to a large extent in dyeing cotton aniline black and chrome yellows and oranges. The dyeing of aniline black on cotton consumes large quantities of the bichromates if ungreenable blacks are to be produced. In dyeing of logwood blacks and cutch browns it is largely used. So far no method is known of mordanting cotton with chrome mordants in a perfectly satisfactory manner. In the cases of the use of chromes given above, these bodies are used either in the dye-bath or afterwards to fix the colour on the fibre. For such colours as alizarine, galloflavine, anthracene brown, gambine dioxine, which require the fibre to be previously mordanted, no chrome mordant has been found that will give full rich colours with these dye-stuffs; either there is not a sufficient quantity of mordant fixed on the fibre or the mordant is not uniformily distributed on the fibre, and uneven colours result. The employment of basic mordants with or without the use of glycerine to prevent too rapid drying gives only imperfect results. A method of mordanting sensibly superior to that ordinarily used consists in fixing on by the other of a salt of chromium and an alkaline solution of oxide of chromium; a double precipitation of oxide of chrome occurs, which is derived partly from the salt of chrome and partly from the fixing bath. This gives very uniform and full shades more so than any other method of using chrome mordants. The basic mordant must contain a slight excess of oxide of chromium; if the caustic soda be in excess the results are not as good, as the alkali prevents the proper fixation of the chrome oxide. For light colours a bath of basic mordant may be used, the fibre being laid down in it over night, then wrung, dried, and washed. Treatment with silicate of soda or ammonia will help to fix the oxide of chrome on the fibre. It has also been proposed that for colours where a light shade of grey will not have any appreciable effect, the cotton be dyed a light grey with bichromate, aniline acid and then dye in the colouring matter as usual. There is some quantity of oxide of chrome deposited on the fibre, and this acts as a mordant.

TANNIN AND ANTIMONY AS MORDANTS.

When a solution of tannin is added to a solution of a basic coal-tar dye, the latter is precipitated as colour lake, insoluble or nearly so. The complete precipitation is in some cases prevented by the acid which is present in combination with the colour-base, which is due to the solubility of the colour lake in this acid; by neutralising with soda this action can be prevented and the colour completely precipitated. Justus Koechlin has found that for 4 parts of magenta, there are required 5 parts of tannin and two parts of soda for complete precipitation of the dye-stuff; for 4 parts of malachite green, 5 of tannin, and 1 of soda are required; and for 4 parts of methyl green 10 parts of tannin and 4 parts of soda. G. H. Hurst, in his work on "Aniline lake making," gives from 1 to 1½ parts of tannin for each part of colouring matter used, says nothing of soda being required, and further states that the whole of the colouring matter is deposited. If the tannin is greatly in excess there is a slight tendency for the colour lake to be re-dissolved.

The application of tannin in the dyeing of cotton is carried out as follows:—The yarns or tissues are first passed through and allowed to steep in a solution of tannin containing ¼ lb. of tannin in a gallon of water, using the bath at from 50° to 60° C., and allowing the fabrics to remain in six hours. For delicate colours it is necessary to use as pale a tannin as it is possible to get; for dark shades the tannin may be replaced with economy as to cost by about twice its weight of sumac extract or five times its weight of sumac. No strict rules can be laid down as to the quantity of tannin to be used, as it depends much on the quality of the tannin materials employed and on the kind and quantity of dye-stuff used. Generally about 2 to 3 per cent. of tannin is employed for medium or pale shades, and 4 per cent. for dark shades, these quantities being calculated on the weight of cotton to be dyed. If the tannined cotton were entered directly into the dye-bath, some of the tannin would become dissolved off the fibre, and, passing into the bath, would precipitate some of the colouring matter out to the bottom of the bath. This would also get on the fibre, and being loose would cause the latter to be dirty or rub very much. To prevent this the tannin is fixed on the fibre by means of a metallic mordant, such as antimony or tin. This is done by passing the tannined cotton through a solution of a metallic salt. A large number of these are and have been used, alum, tin crystals, antimony chloride, and other antimony preparations, etc. Of all these, tartar emetic has been found to be the one that gives the best results, and is the almost universal mordant or fixing agent for tannin now in use. This is because it contains a fairly large proportion—about 43 per cent.—of valuable metal, is neutral, and any free acid that may be formed from it does not appreciably affect the colour or prevent its dyeing properly, as happens with other dyeing preparations and salts of antimony. Many substances have been proposed and offered as substitutes for tartar emetic, but as yet none have been found to equal it.

Tartrazin can be printed on cotton with a colour made of 7½lb. starch thickening, 15lb. dye-stuff in 20 per cent. paste (the base of tartrazin is here meant), and 7½lb. acetate of chrome. After printing, the goods are steamed, washed, and soaped.

FLUORIDE OF ANTIMONY v. TARTAR EMETIC.

The Committee of Chemistry of the *Société Industrielle*, of Rouen, requested MM. Ed. Koepp and S. Brieere to report upon the merits of Koepp's substitute for tartar emetic. In a report presented to the Committee, they say:—

"We thought it would be interesting to complete our work by the study of two other similar products which have lately been introduced, viz., the liquid fluoride of antimony and antimony salt, the combination of antimony fluoride and ammonium sulphate. Of the three products Koepp's double fluoride of antimony and sodium is the most interesting. It contains theoretically the greatest amount of oxide of antimony, 66 per cent., and on analysis the samples forwarded to the Society gave theoretical numbers. Antimony salt contains only 47 per cent. Sb_2O_3, and the liquid fluoride of 1·655 sp. gr. only 36·9 per cent., tartar emetic contains 43·6 per cent. Sb_2O_3.

"Having made a series of experiments with each product in the laboratory, we repeated them in the works, so far as antimony salt and Koepp's fluoride were concerned. We considered that the liquid fluoride was too dangerous to be placed in the hands of the workmen, as if it comes in contact with the skin, very serious burnings are the result. The trials were made in baths containing equivalent quantities of Sb^2O^3 of each substance. These baths were made up as follows:—

"For Koepp's salt:

7·05 kilos. of the fluoride,
6·00 ,, soda carbonate,
2,200 litres of water.

"For antimony (De Haen's) salt:

10·12 kilos. of the salt,
6,00 ,, soda carbonate,
2,200 ,, water.

"For comparison of results an ordinary tartar emetic bath was made up as follows:—

11 kilos. tartar emetic,
6 ,, Soda carbonate,
2,200 litres water.

"On comparing samples of pieces treated in these various baths we found the following results:—Methylene blue was sensibly greener and less full when treated in the first two baths than when fixed by means of tartar emetic. Reds, yellows, greens, greys, etc., were certainly duller. After seeking for the cause of this, we believe it is to be found in the strong acidity of the solutions of the Koepp's fluoride and De Haen's salt, whatever the prospectuses of the makers may say to the contrary. In consequence we conclude that neither double fluoride of antimony and sodium (Koepp's salt), or antimony salt can advantageously replace tartar emetic as a fixing agent for the coal-tar colours."

BLEACHING BY ELECTRICITY.

(Continued from page 374.)

It was in 1883, after the failures of M. Naudin, that M. Hermite was led to take up the subject of the electrolysis of the chlorides. After prolonged experiments on sodium chloride, he relinquished this substance, firstly for calcium chloride, and then for magnesium chloride, the latter salt in his opinion lending itself best to transformation into a bleaching agent. In the Hermite process the "electrolyser" is of galvanised cast-iron. Along the bottom runs a pipe, pierced with numerous holes, by means of which the solution enters the vat. A channel runs along the upper edge of the "electrolyser," into which the electrolysed solution overflows and finds its way to the bleaching vats. The cathodes consist of a number of discs of zinc mounted on two spindles, which slowly rotate. Between each pair of discs is an anode plate, consisting of platinum gauze fixed in an ebonite frame and communicating by a leader lug with a copper bar. In order to keep the zinc discs perfectly clean, flexible ebonite scrapers are fixed to the anodes, and as the zinc discs revolve these scrapers brush their surfaces clear of any deposit. In carrying out operations on a large scale several "electrolysers" are connected in series. Generally speaking a current of from 1,000 to 1,200 ampères at a pressure of five volts is employed.

From the point of view of economy the anode should be a good conductor, cheap, and unattacked by the products of electrolysis. Carbon seems therefore to be the most suitable substance for this purpose, and in many processes it has been and is employed. M. Hermite, however, after lengthy experiments failed to obtain a grade of carbon proving sufficiently resistant to the action of electrolysed chlorides, finding that carbon oxidised and disintegrated. The classical researches of Bartoli and Pasogli in 1882 shewed that whenever oxygen was liberated at the anode, carbon is attacked, and we have as a result carbonic oxide, carbonic acid, and a black substance, "mellogen," etc; and also in the case of graphite, graphitic acid. According to the same investigators, when chloride solutions are electrolysed the disintegration of the retort carbon employed is the more rapid the more dilute the solutions. Since, therefore, in the Hermite process the magnesium chloride solution is used very weak, platinum anodes become absolutely necessary, and this renders the "electrolysers" costly, and tends to prevent the general introduction of the process, especially on a small scale. M. Hermite has endeavoured to make use of platinised copper and porcelain, but the platinum was rapidly attacked by the electrolysed solution. Up to the present M. Hermite has employed a 5 per cent. solution of magnesium chloride, but he now proposes to use a more economical bath. After having tried with some success a solution of Starsfurt "Carnallite," which is a double chloride of magnesium and potassium, he now makes use of a solution containing 5 per cent. of magnesium chloride and 5 per cent. of sea salt, a small quantity of recently precipitated magnesia being added to the bath. When this solution is electrolysed only the water and the magnesium chloride appear to be decomposed; the solution remains perfectly clear, and if the sodium chloride were electrolysed, soda would be formed and magnesia precipitated, the liquid being clouded.

(To be continued.)

RECIPES FOR DYERS.

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

CLARET ON COTTON.

For 100 lb. goods. Prepare a dye-bath with

1 lb. diamine black R O,
2½ lb. benzopurpurine 6 B,
10 lb. Glauber's salt.

Dye at the boil for 1 hour, then enter in a fresh cold bath of

½ lb. safranine G,

Work for 20 minutes, lift, wash, and dry.

SCARLET ON HALF WOOL.

For 100 lb. goods. Prepare a dye-bath with

2½ lb. benzopurpurine 10 B,
5 lb. phosphate of soda,
5 lb. salt.

Enter at 60°C., heat to boil, and work one hour; wash, then enter in a fresh cold bath containing

½ lb. safranine G,
1 oz. auramine.

Work for 20 minutes, lift, rinse, and dry.

HELIOTROPE ON SILK.

For 10 lb. silk. Prepare a dye-bath with

¾ oz. acid magenta,
¼ oz. brilliant green,
3 oz. archill carmine,

and sufficient boiled-off liquor; dye at 180° F. to shade, lift, wash, brighten in a bath of acetic acid.

DARK BROWN ON TUSSAH SILK.

For 10 lb. silk. Prepare a dye-bath with old boiled-off liquor, broken with acid, and containing

3 oz. acid magenta,
1 oz. malachite green,
3 oz. naphthol yellow S.

Dye at 180° F., wash, and brighten with sulphuric acid.

SEAL BROWN ON WOOL.

For 100 lb. wool. Prepare a bath with

3 lb. acid brown,
3 lb. indigo extract,
4 lb. sulphuric acid,
8 lb. Glauber's salt.

Enter at 180° F., heat to boil, and dye boiling for one hour. Lift, wash well, and dry.

OLIVE BRONZE ON WOOL.

For 100 lb. wool. Make the dye-bath with

10 oz. fast yellow,
5 lb. indigo extract,
5 oz. orange,
4 lb. oil of vitriol,
10 lb. Glauber's salt.

Enter yarn at 140° F., work for a few minutes, then bring slowly to the boil, and work to shade.

MODE BROWN ON HALF WOOLLEN.

For 100 lb. goods. Prepare a dye-bath with

5 lb. phosphate of soda,
5 lb. common salt,
7 oz. benzoazurine G,
8 oz. benzopurpurine,
12 oz. chrysamine R.

Enter at 140° F., heat slowly to the boil, and dye boiling for one hour.

LIGHT SALMON ON SILK.

For 100 lb. silk. Prepare a bath containing

2 lb. soap,
5 lb. Glauber's salt,
5 lb. phosphate of soda,
½ oz. chrysamine R,
½ oz. benzopurpurine B.

Enter yarn at 180° F., work a few minutes, then heat to boil, and dye to shade, lift, wash, and dry.

LIGHT SLATE ON COTTON.

For 100 lb. cotton. Prepare a dye-bath containing

2½ lb. soap,
15 lb. Glauber's salt.
6 oz. diamine black RO,
½ oz. thioflavine S.

Enter cotton at 140° F., work a little, then heat to boil, and dye to shade, lift, wash, and dry.

ROSE PINK ON SILK.

For 10 lb. silk. Prepare a dye-bath with

2 oz. violamine 2R,
1½ oz. sulphuric acid.

Enter the silk, raise to boil, and work till exhausted.

BLUE VIOLET ON WOOL.

For 100 lb. wool. Prepare a dye-bath with

2 lb. acid violet N,
10 lb. Glauber's salt,
2 lb. sulphuric acid.

Dye at the boil, lift, rinse, and dry.

YELLOW ON WOOLLEN CLOTH.

For 100 lb. of woollen cloth. Prepare a dye-bath with

1 lb. Titan yellow,
20 lb. salt,
½ lb. acetic acid.

Enter the cloth at 170° F., raise to boil, and dye for one hour. Lift, rinse, and dry.

VIOLET ON SILK.

For 10 lb. silk. Prepare a dye-bath with

3 oz. violamine B,
4 oz. sulphuric acid.

Dye at boil, lift, rinse, and dry.

SCARLET ON SATIN.

For 100 lb. satin. Prepare a dye-bath with

10 lb. Glauber's salt,
2½ lb. diamine scarlet B.

Dye at the boil for 1 hour, lift, rinse, and dry.

A PATENT has been recently taken out for colouring matters which presents a very novel feature—that of dyeing fluorescent shades on cotton. These are obtained by chlorodinitro benzene $C_6 H_3 Cl (NO_2)_2$ which by condensation with metamido dimethylaniline yields a new base, and this heated with nitroso-dimethyl aniline gives the new colouring matters as a brilliant, crystalline, brownish-red mass of considerable colouring power, dyeing wool a blue-violet, tannin-mordanted cotton a blue violet, fluorescent when seen by artificial light, and silk a violet colour.

THE Russian Government is intending to introduce into South Russia the cultivation of jute, of which the East Indies have hitherto had the monopoly. Experiments made in the Caucasus and in the districts of the Dnieper have yielded satisfactory results.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Accrington.

On Monday night, at the Assembly Room, Mr. Thomas Wood, of Church, delivered an interesting lecture on "A Visit to an Italian Cotton Mill." The lecturer also described the methods and effect of competition in the cotton trade all over the world. A very lively discussion followed the paper, Mr. Wood receiving a vote of thanks for his able discourse.

Messrs. J. and E. Wood, Victoria Foundry, Bolton, have supplied to Messrs. J. Bury and Co., Manchester, for a new weaving shed at Accrington, one of their horizontal tandem engines, to drive 350 i.h.p., with a boiler pressure of 100 lb. per square inch. The cylinders are 18 and 31 inches diameter, the stroke of piston being four feet. The loom shed and other buildings are lighted by electricity.

Blackburn.

On Saturday night last a lecture in connection with the Blackburn Technical School Students' Union was delivered in Paradise-lane School, by Mr. W. Hulme, the subject being, "Notable Blackburn Workmen." There was a large attendance, and in the course of his lecture Mr. Hulme referred to the life and work of James Hargreaves, the inventor of the spinning jenny; Robert Peel, farmer, weaver, and engraver; John Hargreaves, and others.

Bolton.

On Friday night, the 5th inst., a fire broke out at Messrs. Thomas Taylor and Sons' new mill, Great Lever. Fortunately, the damage was confined almost exclusively to the engine-house. Work was commenced on Monday morning at six o'clock, the engine-house, 61 feet by 30 feet, having been covered by a temporary roof, which was framed, put up, completed, and the engines running within 36 hours of the fire.

At a mass meeting of Bolton and district card-room hands on Thursday night, it was unanimously decided to leave work at the expiration of the notice given to the employers unless an advance of 5 per cent. was conceded, with 10 per cent. for strippers and grinders. The masters offer an all-round advance of 5 per cent. from January 1st, with the guarantee that the strippers and grinders shall not receive less than 1s. 6d. increase. The Council of the Card-room Operatives' Association are making preparations for a general strike. One or two employers have granted the advance, but the majority are holding out.

Bradford.

A bag containing about £300 has been stolen from the office at the mills of Messrs. J. Robertshaw and Sons, Allerton.

The managing directors at Messrs. Lister and Co.'s Manningham Mills have announced a reduction of wages in the velvet-weaving department at the mills. The reduction, which is partially caused by the adoption of the McKinley tariff in the United States, affects about 1,100 workpeople, and is said to be to the extent of 20 per cent.

Brierfield.

Upwards of 400 additional new looms are to be put into the Dob-lane Shed, which will make it the largest single weaving shed in the district. The looms will be of the "loose reed" pattern.

The Jewel Mill, which up to a few years ago was run by Messrs. T. and R. Shaw, of Colne, has been restarted, after having been stopped for over three years. Mr. Hartley is the new tenant. He has put down spinning machinery, which is now in full working order. It is rumoured that the bottom portion of the mill is about to be turned into a weaving shed, to be tenanted by two Nelson manufacturers.

Burnley.

Mr. James Blakeley, cotton manufacturer, has been returned unopposed, in the Liberal interest, for the representation of Daneshouse Ward.

At Burnley, on Wednesday, Messrs. W. Thompson and Sons, cotton manufacturers, were fined 20s. and costs in one case, and ordered to pay costs in five others, for a breach of the Factory Act.

A sub-committee meeting of the Burnley Town Council have had under consideration a statement from the directors of the Mechanics' Institution in support of the application to the Council for a grant in aid of Technical Instruction. The directors asked for a grant of £500 during the coming financial year. After some deliberation it was resolved to recommend the Council to make a grant of £400.

Chorley.

At the Bolton Bankruptcy Court on Monday, Arthur C. Smethurst, formerly carrying on business with his brother as a cotton spinner, at Chorley, under the style of Smethurst and Son, appeared on his public examination, having liabilities £4,144, and assets estimated to produce £588. The examination was closed.

Colne.

Stanroyd Mill, which up to eight months ago had been run by Messrs. Hartley Bros. and Co., and given up by them recently, has been taken over by Mr. John Pickles, of the Black Carr Mill, Trawden. The place is capable of holding about 400 looms. The room and power held in the Black Carr Mill by Mr. Pickles, also that held by Messrs. J. Benshinn and Co., who have taken the Viaduct Mills, Privet Bridge, has been taken up by Messrs. Lee and Chester. All the available space has now been filled up at this place. It is stated that before very long the Black Carr Mill will be materially enlarged.

Haslingden.

On Monday the Hargreaves-street Manufacturing Company, Haslingden, were fined 20s. and costs in one case and ordered to pay costs in four other cases for employing women and young persons six minutes after the ordinary time for stopping at night.—The Hutch Bank Manufacturing Company were fined 20s. and costs in one similar case and had to pay costs in nine others.

Horwich.

It is stated that the whole of the money required for the proposed new weaving shed has been subscribed, and that steps will be taken at once to proceed with its erection. The main building will be 213 feet long by 135 feet, but only half of this will be devoted to weaving, the other half forming a warehouse. There will also be a finishing-room two storeys high, a warping-room, a boiler-house, engine room, a room for electric lighting, and other accessories. The water supply will be abundant, a reservoir 70 feet by 35 feet being about to be constructed.

The tradesmen in the town who have conceived the idea of establishing a fund for the erection of a weaving shed in Horwich continue to canvass vigorously, and have received promises of subscriptions amounting to £1,000. A meeting was held last week, Mr. Butterworth presiding, when an address on the benefits which would accrue to the tradesmen if a weaving shed were established in the centre of the town was delivered by Mr. J. Marsh, to whom at the finish a hearty vote of thanks was passed. It was announced that the scheme had met with great favour at the hands of the foremen and others connected with the railway works, and that the site of the weaving shed would be in Lower Horwich. It is to contain 600 looms.

Leeds.

The Swallow Hill Mill, Wortley, belonging to Messrs. Dixon and Gaunt, was destroyed by fire on Tuesday. The loss is estimated at from £3,000 to £4,000, but it is covered by insurance. A woman employed in the mill was burned to death.

Manchester.

A committee consisting of the directors of the Manchester Chamber of Commerce and of the members of the Manchester and Salford Trades Council, which has been engaged in preparing a scheme designed to prevent or lessen the evils arising out of labour disputes, has established a body to be called the Manchester Joint Board of Conciliation. The board proposes to appoint arbitrators in disputes which may arise, and anticipates that it will find a greater disposition to submit the question to its judgment and friendly advice, if its action be confined to an effort at conciliation, without attempting to obtain a result which shall be final. Any trade can make application for the services of the Board. This consists of six members of the Chamber, and six members of the Trades Council, including the presidents of both bodies.

On Friday last a lecture was delivered by Mr. Philip Ellis (of the firm of Tatham and Ellis, needle manufacturers, Ilkeston), at the Peter-street Technical School, on the subject of "Needles used in the Textile Industries." The lecturer dealt with the special position of the Nottingham and Leicester trades in hosiery and lace. The manufacture of needles was traced in an interesting manner from the production of the steel wire to the tempered and finished needles. The importance of the tempering processes was explained and illustrated with a large case containing specimens of a great variety of these articles, and also examples of processes in the manufacture of various articles made of steel wire used in Lancashire weaving industries. The lecturer took the opportunity, in concluding, to urge on the students the importance of taking advantage of the splendid opportunity offered by the Technical School which it was their privilege to possess in Manchester. The address was listened to with great attention, and at the close the lecturer was presented with a most cordial vote of thanks.

The late Mr. Samuel Mills, of Barnfield Cottage, Levenshulme, who was buried at Ardwick Cemetery on Wednesday, came of a family long resident at Ashton-under-Lyne, where he was born in May, 1811. His father, Mr. Aaron Mills, was a manufacturer in a large way of business. When 19 years of age Mr. Samuel Mills invented a cloth which was known by the name of *mousseline de laine*, which was of very thin texture and was made up of cotton and worsted. He could not get anybody in Lancashire to finish the fabric, so he had to go to Yorkshire to get it finished, and it was so well liked that large parcels were disposed of. Is is sold to this day, but the fashions changing, the demand for this particular fabric declined. Mr. Mills was also the inventor of the chiney cloth, which, though it contained not a particle of silk, had the appearance of a silky fabric and was at one time very popular. Mr. Mills was for a considerable period the manager of the Manchester department of a Preston firm, Messrs. Swainson Brothers, and subsequently he became a commission agent, but had been out of business for about twenty years. It is stated that Mr. Mills's father was the original of the Aaron Hartley in Ben Brierley's "Layrock of Langleyside;" and it is an interesting circumstance also that the late John Jennison, who established the now famed Belle Vue Gardens, was a weaver in his service. Mr. Mills attended school with the late Mr. Hugh Mason, M.P., and was first cousin to Mr. Thos. Mellor, ex-M.P. He was also related to the Feswicks of Ancoats. He was a man of many parts, and had a wide acquaintance with Scott and Shakspere. Mr. Mills was a Conservative and a Churchman, and was greatly esteemed by those who knew him. His funeral was attended by his two sons, Mr. S. H. Mills, of Huddersfield, and Mr. T. G. Mills, of Todmorden, and his sons-in-law, Mr. W. H. Wolstenholme and Mr. Alfred Armitage, both of Huddersfield. There are four daughters—Miss Mills, with whom he had spent his declining years; Mrs. J. E. Bailey, widow of the late Mr. J. Eglington Bailey, of Stretford; Mrs. Wolstenholme, and Mrs. Armitage, both of Huddersfield.

Oldham.

On Thursday a fire broke out at the New Earth Mill, Lees-road. The damage by fire and water will be several hundred pounds, covered by insurance.

Messrs. Asa Lees and Company have commenced to deliver machinery at the Irk Mill Company, Middleton.

Mr. Samuel Taylor has resigned, through ill-health, his position as manager of the Vale and Stockfield Mills, belonging to Mr. William Taylor.

The building of the mill for the Elm Spinning Company is rapidly approaching completion, and is now ready for roofing.

Mr. R. Mellor, cotton spinner, Royton, is one of the promoters of the Deflector Safety Lamp and Miners' Appliance Company, Limited.

Mr. J. Regan, under carder at the Oak Spinning Company, has transferred his services to the United Spinning Company.

Mr. William Higson, who has been the secretary and cashier of the Springhead Spinning Company for a period of about 20 years, has terminated his connection with the firm.

Mr. L. Rushworth, of Failsworth, who a short ago returned home after completing an engagement abroad, has re-engaged himself, and is about to return to India.

Messrs. Platt and Company, who are supplying the machinery for the Summervale Spinning Company, have commenced to make deliveries. We might also state that the steam engines are expected to be completed early in the New Year.

It is stated that Mr. Joseph Mills, manager of the Osborne Mill Company, will take the management of the recently-formed Moss Mill Company, Rochdale, which is coming into possession of a new mill owned by Messrs. King.

The directors of the Ruby Mill Company in their half-yearly report just issued state that a portion of the machinery in the mill recently completed has now been working for two months, and they expect all will be completed and at work in the course of a few months.

The directors of the Holly Mill Company have placed the order for the whole of the machinery required in their new mill with Messrs Platt Brothers and Company. The mill is intended to hold about

70,000 spindles. The work of laying the foundation of the mill proceeds apace.

Messrs. George Saxon, of Openshaw, has obtained the order for the mill gearing required by the Neville Mill Company in the additional storey which is to be placed on the present mill. Messrs. Saxon are now on the work in connection with the steam engines for the same concern.

An alteration has been made in the management of the Higginshaw Mills and Spinning Company. Mr. Joseph Robinson, who for some years has acted as manager and salesman, is now to devote the whole of his duties to the latter office, while the inside manager, Mr. James Platt, will undertake the responsible duties of manager. The change has been necessitated owing to the considerable additions which has been made to the concern, which now possesses over 119,000 spindles.

The wages difficulty in Oldham is not yet settled. The datal hands in the card and blowing-room and females in the blowing-room still insist on having an advance of ten per cent., five of which the employers are prepared to concede. As a result of their doggedness, a meeting between representatives of the Card and Blowing-Room Operatives' Association and the committee of the Employers Association took place on Tuesday evening, in the Oldham Lyceum. The question at issue was discussed for about two hours, and the conference terminated without any decision being arrived at. The operatives concerned have this week tendered their notices to leave work next week if the advance is not granted, so that a strike is imminent. The increased five per cent. will make a difference of from 20s. to 40s. in each mill, and this is what the two bodies are really sticking at. The employers contend they should not at present make an exception in the treatment of this class of hands, as they have done on two previous occasions. On all hands it is hoped wise counsels will prevail, but the existing opinion at the early part of the week was that the advance would be given. As matters at present stand it is somewhat difficult to foretell the issue.

Preston.

On Saturday night a fire broke out in No. 3 room of the Lostock Hall Spinning Co.'s Mill. By the use of fire extinguishers the flames were soon subdued, the damage being mainly confined to the destruction of bobbins and cops in the spinning mules. Early on Monday morning several teeth in the driving wheels of No. 2 room gave way, which led to further breakages, and a consequent stopping of that room.

Saltaire.

Sir Titus Salt, Sons, and Co., Limited, have decided, in consequence of the prohibitory effect of the McKinley tariff, to start the manufacture of plush in the United States, and Mr. Charles Stead, the chairman, sails for America next week to supervise the establishment of the new concern.

Shipley.

A meeting of the Shipley Textile Society was held at the Shipley Technical Schools on Tuesday evening last, when a lecture was delivered on the subject of "Silk," by Mr. R. S. Dawson. Mr. Miles Sowden, the president, occupied the chair, and in opening the meeting said that at the present time there were thousands of persons in the district who were dependent upon the silk trade for their living. This was an industry which might, with advantage, be considerably developed. Mr. Dawson then delivered his lecture. Having traced the history of the production of silk, and the natural history of the silk-worm, he described the method of reeling the cocoon. He also described the wild silk-worm, artificial silk, the chemistry of the silk fibre, the reeling and spinning of silk, and the uses of silk, Tussah silk, and seal plush. The various points in the lecture were illustrated by lantern views. The slides had been kindly lent by Professor Hummel, of the Yorkshire College, Leeds, and the lantern was cleverly manipulated by Mr. Aldred F. Barker, head master of the Shipley textile classes. At the conclusion of the lecture the Chairman complimented Mr. Dawson on the ability and thoroughness displayed in the preparation and delivery of the lecture. Mr. Barker moved a vote of thanks to the lecturer. Referring to a proposal which, he said, had been recently made to introduce the woollen industries into some parts of Ireland, he expressed the opinion that silk might be introduced with much greater advantage, because larger patterns were often used in silk, and these large patterns could be better woven on the hand loom. The motion was seconded by Mr. F. Bradbury, secretary of the society, and adopted. A similar compliment was paid to the chairman, on the motion of Mr. Clough, seconded by Mr. Wyrill. The society now numbers over eighty members.

SCOTLAND.

Dundee.

The strike of bleachers at Messrs. Moodie and Co.'s, Balmuirfield, reported last week, has terminated by the firm agreeing to pay wages weekly in future. Work was resumed on Monday morning.

On Saturday morning a fire broke out in Ladywell Calender, Meadowside, whereby damage to the extent of £100 was done. The outbreak originated in a cropping machine, which became overheated by friction.

Private telegrams have been received here to the effect that the Calcutta mills have resolved—in the course of February next—to work five days instead of four as at present, that they are to adopt a free price-list in January, and in the meantime are not to put restrictions on extensions.

Glasgow.

We understand that the old-established firms of Messrs. C. Todd and Higginbotham and S. Higginbotham, Sons, and Co., calico printers, Springfield Works, and Springfield Court, Queen-street, have been formed into a limited company. The share capital has been subscribed by members of the family, none being offered to the public, and the new concern will trade as S. Higginbotham and Co., Limited.

The Central Agency, 8, Maxwell-street, representing Messrs. Jonas Brook and Bros., Clark and Co., John Clark, jun., and Co., and J. and P. Coats, Limited, thread manufacturers, have bought the ground on the north side of Bothwell-street, between Wellington-street and Campbell-street, on which they purpose erecting suitable offices for the accommodation of their large staff, their present premises being insufficient for that purpose. The price paid was £15,000.

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

India, China.	U. S. & Canada.	W. Indies & South America.	Australasia.	Continent.	Totals.	Totals previous week.
£	£	£	£	£	£	£
90,517	15,009	—	2,787	80	108,393	54,615
113	12,433	—	277	—	12,823	15,409

A meeting of the directors of the Chamber of Commerce was held on Monday, Mr. James Finlayson, the president, in the chair. A minute of the Committee on Foreign Affairs stated that a number of gentlemen had promised to send in written reports regarding the way their particular trades would be affected by the new French tariff. The chairman said the directors, after getting the information, would do their best to get the new tariff placed on a satisfactory footing. The information would be placed before the Committee in London by their representative, Mr. Guthrie. The directors would be glad if any other traders should come forward and give additional information. The minute was adopted.

Perth.

A movement was set on foot a few weeks ago by those employed in the dyeing and cleaning works of Messrs. Pullar and at their various receiving offices throughout the kingdom, to contribute a sum for the purpose of purchasing a marriage present for Mr. Rufus D. Pullar, elder son of Mr. Robert Pullar of Tayside. In the course of a few days a very handsome sum was subscribed, the result being the purchase of a handsome silver tea and coffee service and dessert service. In the latter there are four elegant tripod stands, bearing graceful foliated uprights and corona in the Renaissance style, with Vandycked glass dishes. There are also two delicately-chased fruit baskets of the newest style in table decoration. The tea and coffee service is fashioned and ornamented in the Hindustani style, being a reproduction of the service of plate presented to H.R.H. the Prince of Wales when in India. It is massive and striking in character, and is completely covered over with richly and minutely chased Indian pine foliage and elaborate details of Hindu art. Engraved monograms embellish all the plate, and on one of the principal pieces the following inscription is engraved :—"Presented to Rufus D. Pullar, Esq., on the occasion of his marriage, by those employed in Pullars' Works and Receiving Offices. Perth, 11th December, 1890."

IRELAND.

Coagh (Co. Tyrone).

Owing to a breakage in the machinery the hands employed at Messrs. Duff Brothers' spinning and weaving factory have been thrown out of employment for the last week.

Reviews of Books.

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

Clegg's Ready Reckoner for the Cotton Trades. Oldham: W. E. Clegg. 246 pp. 15s.

This is a handy volume of tables for use in the spinning branch of the cotton trade. It gives a series of tables shewing the value of any quantity of cotton or yarn in 64ths from one-sixty-fourth to the full penny inclusive. Another series is in 16ths from 6d. to 1s. inclusive. Next come two series of wages tables, the first for the card-room, reckoning in decimals or fractions, from 2 to 120 hanks; the second for reckoning spinners' wages, from any number of hanks up to 66,000 in decimals or fractions. The book concludes with an important table giving the relative price of cotton per lb. at Liverpool, and after the same has passed through the spinning and cleaning processes up to the engine head. This table is based on the number of ounces lost for every 25 pounds sent through.

The work is printed in clear good type on good paper, and is a credit to the local press of Oldham. It seems to us that it should be regarded in the offices of mills and merchants as a valuable acquisition, constructed as it is to save hours of tedious calculations, with all their risks of annoying errors. We regard it as one of the most useful ready reckoners known in the trade.

Hazell's Annual for 1891. London: Hazell, Watson, and Viney. 706 pp. 3s. 6d.

This useful and valuable reference work has now reached its sixth year of issue, with a continual increase of public favour. It affords information upon almost every matter that can engage attention; indeed it would be difficult to compile even a short list of current topics that are *not* dealt with in its pages, and all, moreover, are brought well up to date. For the publicist and busy man we consider it indispensable.

Barker's Facts and Figures for the Year 1891. Edited by Thomas P. Whitaker. London and New York: Frederick Warne and Co.

One does not care to welcome any fresh visitors in what may seem an already crowded field, but in the case of the above work the public will, we think, consent to "make room for one." For the publishers offer over 320 p.p. of alphabetically arranged facts on every imaginable subject. The book is one of the most elaborate compilations at the price we remember seeing, and is prepared in such a manner as to admit of easy reference.

We have received a copy of the *New England Magazine*, which is a handsome publication in the style of Harper's, issued by the New England Magazine Corporation, 86, Federal-street, Boston, Mass., U.S.A., price 30 cents, post free. The particular number under notice contains a long descriptive article on the Pawtucket centenary of the introduction of cotton spinning into America, and is embellished with many fine illustrations. Those of our readers who would like a permanent record of this interesting event in a handy and elegant form, could not do better than order same of the publishers.

Miscellaneous.

THE FINANCIAL CONDITION OF THE BOMBAY COTTON MILLS.

A correspondent writes as follows to the *Bombay Gazette* :—

An enquiry was recently made in the leading columns of the *Bombay Gazette* as to the present money value of our cotton mill industry as compared with its original cost as represented in the paid-up capital of the several mills. The enquiry is not very difficult to answer as regards each individual local concern, but as the result thus evolved can have no interest or only a sort of gossiping interest for the general reader, we will try to exhibit the sum total of the present value by grouping together the various mills according to the

nationality of their management. Such a course is the more advisable, as some of the concerns are past praying for, and the identification of these by name will import an element of personality, which is obviously out of place in an economic enquiry. We shall have to extend the scope of our enquiry so as to elucidate the principle or principles on which each group of mills manipulate the several items of their accounts and to explain the cause or causes which differentiate the standing of the several groups from each other. To begin, then, we have 61 local mills officially returned, of which ten are private properties and two were destroyed by fire. The records of some twelve more are unavailable for our purpose, owing mainly to their working imperfectly or having commenced work only recently. We have accordingly to fall back upon 37 mills working in the island, which are managed on the joint-stock principle, and the managers of which have rendered an account of their stewardship for their proprietors. The mills are divided into four groups —English, Parsee, Hindoo, and Jewish—following the nationality of their management, and the table given below contains a summary of their accounts under the several headings mentioned in the respective columns. The figures of the English group are taken from the accounts of the mills for the year ended June 30th, 1880, while those for the other groups are in the case of some mills for the same period and for others for the year 1889. We have separated the mills in each group into two classes, namely, those paying dividends and those which have paid none—a course obviously necessary to ensure a fair comparison.

No.	Group.	Share capital paid up.	Value of share capital on 1st Nov., 1880.	Commission charged by agent in accounts.	Commission at 10 per cent. calculated at net profits.	Amount paid share-holders as dividend.	Depreciation calculated at 5 per cent. on value of blocks.	Depreciation allowed in accounts.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.	English—							
	5 mills paying dividend	35,64,668	38,05,458	30,344	30,344	2,92,354	3,00,163	2,43,293
	1 mill paying no dividend	68,000	4,82,800	Nil.	Nil.	Nil.	64,085	26,093
II.	Parsee—							
	10 mills paying dividend	1,47,00,800	1,08,21,470	6,80,795	1,13,371	9,82,877	2,87,880	4,13,698
	4 mills paying no dividend	39,88,000	18,78,200	1,26,377	Nil.	Nil.	1,74,385	Nil.
III.	Hindoo—							
	13 mills paying dividend	1,19,71,735	98,92,185	6,18,257	88,723	7,90,285	8,90,076	2,89,707
	2 mills paying no dividend	15,60,000	8,38,500	70,359	Nil.	Nil.	1,27,500	Nil.
IV.	Jewish—							
	2 mills	23,00,000	28,28,000	1,23,624	11,359	64,000	2,07,330	40,000

N.B.—To avoid identification the mills of the last group are not separated as in the other groups.

It will be seen that the English group, which tops the list, also tops the Parsee and Hindoo groups in respect of its standing as a medium of investment. Its capital of 35¼ lakhs in round numbers was worth 38 lakhs in the open market on the first of this month, which is equal to a premium of 6¾ per cent. This may appear not much to boast of—but it is in every way re-assuring when compared with the position of the Parsee and the Hindoo groups. We are now taking cognisance of only the dividend paying mills—and these in the Parsee group, with a capital of 147 lakhs stand in the open market for only 108 lakhs, or equal to 73 per cent. of the capital amount, while the Hindoo group shews only 99 lakhs for the shareholders' 119¾ lakhs, equal to 81 per cent. of the capital sum. Taking both the groups together, the result is that the original capital of 266¾ lakhs in the hands of Parsee and Hindoo managers is now worth only 207 lakhs—a shrinkage of fully 23 per cent. against 6 per cent premium shewn by the English managers. What may be the cause of such a startling disparity is well worth enquiring. To the initiated there will be no necessity for going far afield, for some of the columns of the above table supply an answer which those who run may read. Column 5 shews the commission actually charged by the several groups, whereas in the next column we have shewn the amount of commission which will accrue if charged on the English system. That is, ten per cent. on net profits, taking net profits to be the legitimate earnings of the mills after paying all disbursements and providing for the wear and tear of the machinery and plant at a certain percentage on the value of the block. This may be described as a scientific basis of calculation, and it is on this basis that the mills of the English group charge their commission, taking five per cent. as the amount of depreciation. At this rate the English mills pay Rs. 30,344 to their managers, which is hardly equal to 1 per cent. on their capital of 35¼ lakhs. The mills of the other groups, however, are a law unto themselves in this respect. Their method of charging commission has become a matter of folklore on this side of India—its *rationale* being that commission must be forthcoming for the managers, whatever else may betide the concern. From column 6 it will be seen that their legitimate commission calculated on the basis above indicated amounts to Rs. 2,13,453, for the three groups put together, whereas the amount actually charged (column 5) totals Rs. 1,362,985. The capital of the groups paying this commission amounts to Rs. 276 lakhs in round numbers, and thus the rate of commission is fully 5 per cent. on the capital. The amount distributed to the shareholders on the other hand comes to Rs. 18,37,162, but as one-fourth of the shares may be said to be held by the managers themselves their real earnings from the mills will be represented by one-fourth the amount of the dividend plus the commission, or say over eighteen lakhs. Verily if any one has succeeded in finding the philosopher's stone in this world it is the Bombay mill managers. They have in fact erected the art of charging commission into a fine art. For, it will be seen that it is not only the dividend-paying concerns, which yield commission to their managers, but also those concerns which pay no dividend to the shareholders make no default in paying commission to their managers. It is not so with the English group. There the one mill which pays no dividend to its shareholders pays no remuneration or commission to its managers. But in the other groups seven mills with a capital of 70 lakhs have not a rupee to spare for their poor shareholders, yet their good managers take care that they should not go without their accustomed remuneration. We find accordingly (column 5) that these seven concerns pay between them Rs. 2,56,427 for commission, which is equal to over 3½ per cent. on the capital, which goes supperless from the feast. No wonder that people should rush to the Framjee Cowasjee Institute to see if the new evangel of socialism could shew them the way out of this Slough of Despond. Some agents of the mills paying no dividend have by way of "ransom" returned the whole or part of their commission for the benefit of their concerns, but it is an act of pure grace on their part. Two mills of the Parsee group and one mill of the Hindoo group, to their credit be it said, do not charge commission like the other native mills. Two of them charge 12 per cent. on net profits, though they do not provide for depreciation on the principle of the English group, while the third mill contents itself with allowing a round sum by way of commission to its managers. On the general question of the mill commission of the majority of the Bombay cotton mills, it should however be asked in fairness whether the industry would have attained its present proportions if the element of self-interest had not been allowed to have full play. There is a soul of goodness in things evil, and we owe it to the cupidity of the Bombay capitalists that we have transplanted in our midst a manufacturing industry which bids fair to change the economic condition of the country. The last two columns (8 and 9) of the table should not be ignored, as on them to a large extent depends the position of the mills as efficient concerns or otherwise. The English group, it will be seen, keeps up the efficiency of its mills by making almost full provision for their renovation, while the Parsee group provides only Rs.4,13,695 against Rs.9,87,880, and the Hindoo group Rs.2,89,707 against Rs.8,90,076. The Jewish group is still worse in this respect. But one of the mills in by-gone days appears to have made ample provision for its renovation, and it reaps the result in the standing it enjoys as a financial investment. Finally, taking the dividend-paying mills of all the groups together, and massing together their actual gross earnings, as shewn in columns 5, 7, and 9, we find that 29 mills, with a capital amounting to 310 lakhs have realised a gross earning of 45 lakhs, equal to a trifle within 15 per cent. Of this amount the shareholders have got 21 lakhs, or say 7 per cent. From English accounts we find that for the year 1880 86 mills, with an aggregate capital of £3,340,000 have realised a gross earning of £220,587, equal to £6 12s. 1d. per cent. on the capital, of which the shareholders have got only 3¾ per cent. Really, if the Indian authorities recognise any duty of their position in improving the economic conditions of the country, the least they could do is to bring such facts as these, with the weight of their authority, before the capitalists of England, who are now so sorely pressed for want of eligible investments.

THE worsted yarn-spinning factories of Germany are suffering from over-production. Through the increase in the number of works and the badness of trade, manufacturers have sustained considerable losses. It is therefore absolutely necessary that steps should be taken to meet the emergency. Isolated efforts have been made by individual manufacturers, by means of fewer hands and shorter hours, but now the association of German worsted yarn spinners has decided to deliberate concerning the adoption of appropriate measures on the part of the whole body.—*Central-blatt.*

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

The movement for an advance of wages continues in a steady course. Some little hitches have arisen in the negotiations at Oldham and Bolton, mainly regarding the card-room hands, on whose behalf, or at least a portion of them, an advance of 10 per cent. is demanded. Owing to the great improvements that have taken place in this department of the mill during the last twenty or twenty-five years there are now very few workers of this class in each mill. It is hardly likely, therefore, that an arrangement will fail to be made. In Bolton, owing to the exacting demands of the leaders of the operatives, it is quite possible that there may be a partial cessation of work for a few days, arising from the fact that the operatives require the advance to commence from the 19th inst., whilst the employers have conceded it to commence from the last making-up day in the current year. Owing to the annual holidays happening at the same time the difference is reduced to one of four or five working days. It is probable, however, that the difference will be settled before the notice expires. In all the other spinning districts claims for an advance have been or will be put forward in a similar manner, and it is not likely but that they will be conceded to the same extent that it has been in the two leading centres.

COTTON.—There has been a fairly steady and almost full demand for the raw material during the past week. It would seem as if the market had at last found something like a firm base, as the tendency to droop in spot cottons has practically passed away. Last Friday Americans advanced $\frac{1}{16}$d., and this has since been maintained. Futures have fluctuated sharply, having gone up and down almost daily, with the net result on the week of a loss of 1 point for the current month, and 1½ to 2½ for other positions. The American crop still continues to shew great variability in quality, Texas still getting a relative advantage of $\frac{3}{16}$d. to $\frac{5}{16}$d., and sometimes even a ¼d. per lb. over other sorts of corresponding quality. Weft cottons continue in abundant supply. Brazilian is unchanged. For Egyptian there has been a good demand; prices eased off in the early part of the week, but have since then more than recovered the loss, current qualities exhibiting mostly an advance of $\frac{1}{16}$d. upon last week. In Peruvians a fair demand has been experienced; the rougher sorts being freely offered have not improved, but smooth are held for full rates. In East Indian a good business has been put through at steady rates. The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forwded.	Sales.	Stock.	Actual Export
American	105,181..	76,182..	51,610..	521,460..	4,705
Brazilian ..	6,484..	3,210..	2,580..	23,060..	—
Egyptian ..	2,479..	7,839..	6,070..	61,690..	346
W. Indian..	3,202..	1,094..	1,550..	17,310..	706
E. Indian ..	362..	2,037..	5,950..	173,800..	1,226
Total..	117,708	90,362	67,760	797,320	6,983

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

	G.O.	L.M.	Mid.	G.M.	M.F.
American	4 13/16	5	5 7/16	5 7/16	5 13/16*
			M.F.	Fair.	G.F.
Pernam			5 7/16	5 3/8	6 1/4
Ceara			—	5 1/4	5 5/16
Paraiba			—	5 1/4	6 1/4
Maranham			—	5 1/16	6 1/4
		Fair.	G.F.	F.G.	F. Gd.
Egyptian		5 7/8	6 1/8	6 1/4	6 13/16
Ditto, white		6*	6 1/8*	—	—
	Fr. F.F.	G.F.	F.G.	Gd.	F.G. Fine
M.G. Broach	— —	—	—	4 1/8	4 13/16 5
Dhollerah	3 7/16 3 9/16	3 11/16	3 13/16	4 1/16	4 1/4 4 13/16
Oomra	3 3/4* 3 7/8	4	4 1/8	4 3/8	4 7/16 4 7/8*
Bengal	— —	3 7/16*	3 9/16*	3 3/4*	4* 4 5/16*
Tinnivelly	4 1/16* —	4 1/4	4 1/2	4 3/4	— —

*Nominal.

YARNS.—There has again been a slow demand for all descriptions of yarns, both from manufacturers and exporters, yet this has not affected prices to any appreciable extent, and it continues to be a matter of marvel how they are so well maintained. The balance between supply and demand must for a long time have been running very evenly, because the only factor that can be discovered to have given spinners the decided advantage they possess has been the moderate increase in the demand for yarns from Austria, and some little in the finer qualities from America, which were rushed in to avoid the McKinley tariff. A similar cause, viz., an advance of duty, stimulated the movement from Austria. Still in combination the aggregate taken in this manner was not much, although it has proved sufficient to turn the scale heavily against home consumers. Prices remain unchanged, and in view of the now near advent of the Christmas holidays there is no great desire on the part of either side to press for new engagements. Exporters are operating only to a very limited extent, foreign distributing centres sending only very small orders forward, and those at rates which as yet prove quite unacceptable. Current rates are perhaps the turn easier on the whole since last week.

CLOTH.—In cloth very little change has occurred in the market, the low average demand which has been experienced for several weeks continuing without material change, though perhaps a little more enquiry is encountered here and there. Best shirtings are still fairly well engaged, but in second or lower qualities manufacturers are not so well supplied with orders. Mulls, jaconets, and dhootie goods are about steady, but the rates current are very unremunerative to makers. South Lancashire and Cheshire printing cloths are well sold and firm, but Burnley descriptions are neglected and very unremunerative at current rates. The approach of the stock-taking season in the home-trade houses limits the demand for the heavier cloths suitable for the home trade.

WOOLLENS AND WORSTEDS.

BRADFORD.

The wool market continues dull, and prices of lustre descriptions are very weak. Staplers are disinclined to sell at current rates, owing to the fact that country dealers are firm and refuse to replace stocks here at rates which will leave staplers a profit. Alpaca is steady. Mohair is not moving freely. But any tops are bad to sell, and the stiffness shewn at the recent London wool sales renders the position in this market more difficult still. Spinning machinery is not fully employed, although some firms with special orders on hand are busy. The general run of the trade, however, may be described as very dull. The coarse counts of mohair yarns are more largely enquired for. Botany yarns are slow. The piece trade discloses no new feature. The home trade is very quiet, and there is very little doing for the United States of America. From the Eastern and Continental markets there are few orders, and on such as are received the margin of profit is only small. Most houses in the stuff trade are now busily engaged stock-taking.

HUDDERSFIELD.

Manufacturers have now sent their travellers out to the various wholesale centres for the purpose of shewing samples of next winter's goods, but the orders booked have not been satisfactory, and a considerable amount of dissatisfaction is expressed at the turn events have taken. Repeat orders for this season's trade are scarcely very forward at all, very few buyers having been in the market this week. Machinery is not fully employed, and there is not sufficient work to keep all the operatives in the town at work. Fancy worsteds are steadily yielding ground to vicunas and serges, which are more popular than ever. Makers of medium goods keep moderately well employed, and give work to the spinners, who otherwise would be poorly off. There has been little or nothing doing in the local wool market during the week.

LEICESTER.

The wool market is still in a very depressed condition, and the turnover continues to be of small extent. Spinners are disinclined to buy raw material owing to the depression in the yarn market, but prices are, nevertheless, steady, and holders do not press buyers, as they know that stocks cannot be replaced on better terms. Both growers and dealers in the country are disinclined to part with raw material on the terms offered. Their position is now a much stronger one, as the smaller sellers, whose impecunious position placed them at the mercy of buyers, have now been cleared out. Skin wools sell steadily at firm prices, but lustres and demi-lustre fleeces are neglected. Colonial wools are in fair request and prices are better maintained, but speculation is entirely suspended, and a good deal of distrust and want of confidence still prevail. Deep-stapled fleeces make 23s. to 24s. per tod for good qualities; superior descriptions, 25s. to 26s. per tod; choice lots, 26s. to 27s. 6d. per tod; and inferior 21s. to 22s. per tod. The yarn market is flat both for home and export, orders are small, and production is being kept very low. The hosiery trade is fairly active.

GLASGOW.

Messrs. Ramsey and Co., in their report dated December 9th, say:—

WOOL—At the public auctions held on Thursday last, there was only a moderate attendance of buyers, and competition was rather slow. The bulk of the wools offered had to be withdrawn. Since the sales a fair enquiry has been experienced, resulting in some business at current prices. White-faced wools may be quoted a shade easier, and black-faced about steady, as compared with former sales.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, 10th Dec., 1890.

The approach of the holidays affects the market. There is less disposition either to buy or to sell. Calcutta advises rather a firmer tone in jute, but on the spot the price of the jute, especially for the commoner qualities, is weak.

Calcutta also proposes to break the arrangement for short time which has so long existed there, and to run machinery at least five days a week and at the same time to break up the syndicate which fixed prices. All this tends to make buyers here extremely cautious.

Flax is still dragging, and there is no disposition to increase stocks even at the very low prices current. Tows are also very cheap, and accumulate.

Jute yarns are a shade quieter; for the common 8lb. cop 1s. 1¼d. is all that buyers offer. On the other hand, the fine qualities of 7lb. were done yesterday at 1s. 7¼d., shewing that the extreme difference between good and common yarns still exists.

Heavies are in good demand at 1¼d. for the lea chains.

Flax yarns are quiet, but for some sizes of good warps full prices are paid, and considerable business is done.

Tow yarns are very dull, especially the heavier sizes.

Hessians are without change in value. The market is on the whole rather against sellers. It is remarkable however that all the makers of fine wide goods of high quality are well engaged for the spring trade, and for such quality prices are not only maintained but large orders could be placed only at a slight advance. There is great difficulty in selecting fine jute for such goods.

Linens are still in fair demand. The buyers are not now indeed operating, but there is no want of orders, and all the looms in Forfar, Fife, and in Brechin are well engaged.

Arbroath is specially active in the heavier makes of common linen goods, and the demand for canvas is sufficient to prevent the accumulation of stock.

Dundee fancy goods are in excellent demand, especially medium priced carpets. Even in the best houses these are being used. Where there is much traffic they are now made in colours which are suitable and fast, and the demand for them increases from day to day.

Twines and cords also are in excellent demand, and the makers are pushed for delivery.

SILK.

LONDON.

THURSDAY.—London Produce Clearing House quotations of 5¼ Tsatlee: December 11s. 8d., January 11s. 8d., February 11s. 9d., March, 11s. 9d., April 11s. 10d., May 11s. 11d., June 12s., July 12s. 1d. per lb. Sales registered, nil.

DRY GOODS.

MANCHESTER.

The departments that have been chiefly engaged this week are not those of special interest to the readers of *The Textile Mercury*. Fancy goods such as ostrich feathers have moved off freely this season, and of late such seasonable articles as handkerchiefs have come in for a good share of attention. Silk scarfs and mufflers have also been in better demand, for presentation purposes, Macclesfield makes having been sold freely. The attractive-looking and cheap foreign silk handkerchiefs, however, still command the bulk of the trade. The weather during the season, both here and in London, has not been favourable for the sale of silk goods, and this has affected manufacturers both in this country and abroad. The demand for evening dress materials has scarcely come up to anticipations, although at this time of the year these goods should be going off well. Carpets are slow.

THE KIDDERMINSTER CARPET TRADE.

Upon the past week a slight improvement in the tenour of this trade may be reported, and Brussels machinery generally has been more regularly employed than for some time. This may not be so much due to any particular inrush of new business, but is probably in the main owing to the increase in calls for delivery of goods required for use at Christmas. Apart from this, however, everyone speaks more favourably regarding the state of their order books, and it is evident that a goodly number of orders which have been kept back by buyers as long as ever possible have been added to those already in hand. The turn of the year is hopefully looked forward to, as then the London buying season opens, and there is no doubt that many buyers in the country markets are deferring their purchases until the new year. Prices all round are exceedingly firm, and although manufacturers are constantly receiving most tempting offers there is no giving way.

There is no material alteration to report in the condition of the wool market, although locally rather more spirit has recently been developed in operations. Reports from other centres, more especially Bradford, tend to keep business backward and under a veil of depression, and until a change in this respect takes place it is feared that no important increase in transactions can occur. Prices, on the whole, for carpet wools are firmer than they were a week ago. In the spinning trade machinery is fairly well employed, and in sympathy with the improvement noticed in the carpet trade, production of worsted yarns is heavier.

A subject of interest in connection with the trade is a contemplated scheme on the part of the Carpet Manufacturing Company of Kidderminster, who intend, we understand, to erect a factory in Canada for the manufacture of Brussels. Four hundred hands are to be employed, but we do not give this information as authoritative. It can, however, be stated positively that the scheme has been considered by the concern referred to. The advantages that would be derived by any firm possessing a well-equipped mill in Canada would be such as to enable it to command the bulk of the trade, especially as there is a duty of 25 per cent. on Brussels and other makes of carpets. British North America has for a long time been increasing its purchases of carpets from this country and is now one of the best customers we have, South America and Australia being two other large buyers. In addition to the advantages secured by the duty, the promoters of such a scheme would be favoured by the absence of any competition worthy of the name. Carpets are produced in Canada, but the factories are very small and contain more hand than power looms, while the goods produced are only of the commoner class.

Joint Stock and Financial News.

NEW COMPANY.

THE MOSS SPINNING COMPANY, LIMITED.

Registered by R. Jordan, 120, Chancery-lane, with a capital of £125,000 in £5 shares. Object, to acquire the cotton-spinning mill recently erected by James Russell King, at Rochdale; to carry on business as cotton spinners and manufacturers, finishers, bleachers, etc. The first subscribers are:—

	Shares.
J. Bunting, 115, Union-street, Oldham....	200
J. Smith, 17, Worneth Hall-road, Oldham	200
J. Clegg, 168, Milnrow-road, Rochdale....	200
J. Mills, 138, Manchester-road, Oldham ..	200
J. Lees, 91, Mibrow-road, Huddersfield ..	200
W. Wild, Fir Bank, Shaw	200
J. Chadwick, Fern Cottage, Shaw	200

There shall not be less than three nor more than seven directors; the first are the subscribers to the memorandum of association. Qualification 100 shares.

R. TALBOT AND SONS, LIMITED.

Registered by Torr, Janeways, Gribble, and Oddie, 38, Bedford-row, with a capital of £25,000 in £5 shares. Object, to acquire certain woollen mills, situate at Carlinghow, near Batley, known as Bulrush Mills, in accordance with an agreement made November 25th between Robert Talbot and John Blakeley, both of Batley. The first subscribers are:—

	Shares.
R. Talbot, Alton Lodge, Batley.....	1
H. B. Talbot, Batley.....	1
H. H. Talbot, Batley	1
C. E. Talbot, Batley	1
J. Blakeley, Batley	1
A. Armitage, Oak Villa, Robin Hood, Loftshouse, near Wakefield.....	1
J. A. Thistlethwaite, Aysgarth House, Eccleshill	1

There shall not be less than three nor more than five directors; the first are the first four subscribers to the memorandum of association. Qualification, £500. Remuneration to be determined by the Board.

Gazette News.

ADJUDICATIONS.

Harry Drake (trading as H. Drake and Co.), Cannon Mills, Great Horton, Bradford, worsted spinner.

William Oxley the younger, Chapel-lane Mills, Heckmondwike, woollen manufacturer.

RECEIVING ORDERS.

Harry Drake, Cannon Mill, Great Horton, worsted spinner; Bradford.

Catherine Haimes, Melbourne, manufacturer, Derby.

Henry Russell, Russell-street, Nottingham, lace manufacturer; Nottingham.

WINDING UP NOTICES.

The Whalley New-road Manufacturing Company, Limited, Blackburn.

PARTNERSHIPS DISSOLVED.

Thwaite, Taylor, and Robinson, St. Paul's Churchyard, London, lace warehousemen.

J. and G. Walthew and Mayoh, New Islington Mills, Manchester, cotton thread manufacturers.

John L. Kane and William Langford, Manchester, apron and pinafore manufacturers.

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.

1ST TO 6TH DECEMBER.

19,530. A. W. Scott, 87, St. Vincent-street, Glasgow. Warp beams.

19,531. C. J. Garnett and A. Moore, 58, Low-street, Keighley. Automatically recording the time of entrance of employés into factories.

19,536. J. Starkie, 4, Yorkshire-street, Rochdale. Reeds for weaving.

19,540. W. Terry and F. Rawnsley, Commercial-street, Halifax. Looms for looped pile fabrics.

19,541. W. Metcalf and S. Appleyard, Commercial-street, Halifax. Kenyon's "under-motion" for operating healds.

19,579. L. Allard, 45, Southampton Buildings, London. Fire-proof fabric.

19,584. G. E. G. Unsworth, 24, Southampton Buildings, London. Doubling, laying, and twisting machine.

19,589. C. C. B. Douglas, 54, Fleet-street, London. Feed supply of wool carding machines.—(*Wingate, Burns, and Co.*, Agents for — *Park*, New Zealand.)

19,593. E. Edwards, 35, Southampton Buildings, London. Apparatus for determining and indicating size and corresponding number of yarns. (*d. Grosse*, Germany.)

19,638. J. Jordan, Market-place, Huddersfield. Machine for curling yarn.

19,642. W. J. Crowe, H. T. Phillips, and W. J. Betts, 4, South-street, Finsbury, London. Manufacture of rope.

19,643. G. Marchetti, 4, South-street, Finsbury, London. A new kind of looped fabric.*

16,699. H. Hickton, 8, Quality Court, London. Skips for ring or doubling frame doffing.

19,782. J. B. Swailes, G. Swailes, and John B. Swailes, 45, Southampton Buildings, London. Cop tubes, and machinery or apparatus for making same.

19,839. A. C. Travell, 44, St. Mary's Gate, Nottingham. Manufacture of twist lace.

19,849. J. H. Stott, 18, St. Ann's-street, Manchester. Swifts employed in winding or reeling yarns or threads into hanks.

19,862. W. T. Martin and W. Hind, 8, Quality Court, London. Top jacquards for lace machines, looms, etc.

19,878. J. McNaught and W. McNaught, 45, Southampton Buildings, London. Machines for scouring and washing wool, etc.

19,903. J. Hodgson, 8, Quality Court, London. Looms.

19,929. H. Grosselin, 55, Chancery-lane, London. Gig mills.

19,939. E. Bottomley, J. J. Grimshaw, and I. Brook, 20, Charles-street, Bradford. Positive take-up motions of looms.

19,959. G. W. Abel, of the firm of Uhle and Co., Temple Chambers, London. Manufacture of hosiery whereby garters are dispensed with.

SPECIFICATIONS PUBLISHED.

1889.

14,304. Green and Lawson. Azo-colouring matters. 6d.

20,327. Ingham, J. and J. Looms. 6d.

1890.

677. Rawsthorne. Carding engine. 6d.

735. Bang (*Dahl and Co.*). Dioxynaphthaline-mono-sulpho acid. 4d.

1,688. Shillito (*Geigy and Co.*). Colouring matters. 4d.

1,771. Shillito (*Geigy and Co.*). Colouring matter. 4d.

5,482. Arnott and others. Washing wool, etc. 8d.

14,432. Dawson and Hirsch. Substantive cotton colour. 4d.

15,170. Schuler. Linoleum, etc. 4d.

16,336. Simoneau and Morse. Warp dressers. 8d.

AMENDED SPECIFICATIONS.

1884.

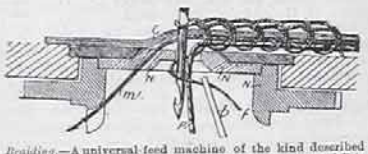
4415.* Von Nawrocki (*Bottiger*). Colouring matters. 6d.

1886.

2213.* Martius. Mixed azo-colours. 6d.

ABSTRACTS OF SPECIFICATIONS.

10,905. July 6, 1889. **Embroidering machines.** E. and R. Cornelly, 87, Faubourg St. Denis, Paris.



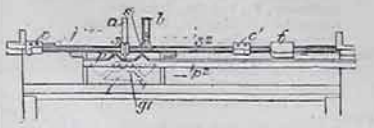
Braiding.—A universal-feed machine of the kind described in Specification No. 6,877, A.D. 1885, in which a cord P is attached to a fabric *a* by an encircling thread *f*, is provided with means for stitching a braid *m* between the cord and fabric. The braid *m* is supplied in front of the needle, through a slot in the revoluble stitching-plate N, from a bobbin carried on by an arm of this plate, and the gearing under the work-plate is re-arranged to afford space for the bobbin.

The cord P passes up to the plate N through a tube, round which the thread-carrier *b* revolves, and in order to prevent contact of the needle with the cord, the needle in descending enters an axial hole in a vertical rod in the centre of the tube; the rod may be fixed, or may be mounted on the revoluble cord-supplying bracket, and the cord passes up between it and the tube. Or the tube may be closed at its upper end, with the exception of separate holes for the needle and cord, in which case it is made to turn in accordance with the direction of feed, and the central rod is not required. 1s.

10,903. July 6, 1889. **Crochet cottons.** E. W. Barlow, Harland, near St. Polten, Austria.

Crochet cottons are made from "reverse twisted yarns," or yarns twisted in the direction opposite to that in which they are usually twisted, two or more of such yarns being doubled and twisted in the same direction to form the "prepared ends," which are combined in the ordinary manner to form the finished cottons. 6d.

10,974. July 8, 1889. **Knitting.** J. Seyfert and H. Dosser, Chemnitz, Saxony.



Parallel and straight-bar machines.—In making split or divided fabrics, the different parts, such as *s s1*, *s2 s3*, are formed by separate thread-carriers, *a b*, operated from the carriage by suitable stops *c c1*, *f* and catch-levers. The inclined grooves of the cam-lock L have a short horizontal portion *gr* on each side, as shewn, and each thread-carrier is tilted towards the needles at the end of its traverse by an incline *p* on the carriage-bar *p3*, in order to ensure accurate feeding of the thread to the last needles of each division. In order to relieve the tension on the fabric during the transference of stitches for narrowing, the take-up roller is moved backwards by ratchet mechanism, brought into action by a cam and levers. 1s.

10,993. July 8, 1889. **Tannin compounds.** B. Willcox, 47, Lincoln's Inn Fields, Middlesex. (*The Farbenfabriken vorm. F. Bayer and Co., Elberfeld.*)

Relates to compounds of tannin with glycerine or grape sugar, decomposable in the steaming process in printing on textile fabrics. These bodies are called "tannin glucosides" and "tannin glycerides." Consists in heating tannin with grape sugar or glycerine to 140° or 160° C. In the Provisional Specification raw sugar, starch, gum, and dextrin are also combined with tannin. 4d.

11,00. July 9, 1889. **Dyes.** H. H. Lake, Southampton Buildings, Middlesex. (*Messrs. Wirth and Co., Frankfort-on-the-Main. Agents for K. Oehler, Offenbach-on-the-Main, Germany.*)

Azo dyes.—Relates to the preparation of brown azo dyes, which dye unmordanted cotton in an alkaline bath, by first forming intermediate dyes of the general formula $SO_3H.C_{10}H_{20-9}(N{=}N.C_{10}H_{20-9}(NH_2)_2)_2$, and then combining these with diazotised aromatic sulpho acids. The intermediate dyes are prepared by diazotizing the toluylene-diamine-sulpho acids of the constitution (CH_3,NH_2,SO_3H), 1, 2, 4, 5; $(CH_3,NH_2.SO_3H,NH_2)$, 1, 2, 4, 6; and (CH_3,SO_3H,NH_2,NH_2), 1, 2, 4, 6 (the last of which is obtained by reducing the dinitro-toluol-sulpho acid of Schwanert) and combining the diazo compound with *m*-phenylene-diamine sulphate. Similar dyes are obtained by substituting *m*-tolylene-diamine in the latter process. These intermediate products are next mixed with the diazo compound of sulphanilic acid-*o*-toluidine-sulpho acid, amido-azo-benzol-sulpho acid, naphthionic acid, or *beta*-naphthylamine-sulpho acid, in presence of sodium acetate moderately heated, then neutralised with soda, boiled, filtered, and precipitated with salt.

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agger and Co., Oldham.

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Platt Brothers and Co., Limited, Oldham.
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Wallwork, Henry, and Co., Manchester.

INDEX TO ADVERTISERS' NAMES.

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