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

Readers at home and abroad are invited to avail themselves (gratis) of our columns, for the purpose of entering into communication with machine makers or others able to supply their wants, and for obtaining any other information on textile matters which they may desire. Their names will not be published unless requested.

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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STRIKES IN THE TEXTILE INDUSTRIES OF RUSSIA.

The town of Lodz, in the Government of Petrokoff, Russian Poland, is one of the most notable centres of the textile industries in Russia, and even upon the Continent. The Labour movement has reached that distant place, and made its influence strongly felt. A correspondent, writing us from thence on Friday of last week, describes the commencement and extension of a large strike in the textile industries of the town. His letter appears in another column, and we beg our

readers to give it a careful perusal. Strikes in this country could be looked upon with some degree of tolerant feeling, if the strikers here had only a tinge of the justification for their proceedings that these poor people have. The hopes expressed by our correspondent, that matters would be settled in a few days, have apparently not been fulfilled, as on Monday the telegraph brought news of rioting and bloodshed, the people having made an attack upon the Jews' quarter of the town,—though what the poor Israelites could have had to do with the low wages and long hours we are at a loss to conceive, as we are not aware that they have taken to textile manufacturing in any of its branches. Previously to this outrage, however, the rioters seem to have wrecked several mills. The lot of these poor workers offers a saddening contrast to that of the well-paid, well-fed, and excellently housed mill-workers of this country. The Russian operatives are in a condition nearly analogous to that of the English operatives of the first quarter of the century, when the introduction of the power-loom so quickly destroyed the occupation of the hand-loom weaver, whilst our vast foreign commerce had hardly shewn signs of a beginning, let alone of being of a capacity that would provide occupation for their displaced labour. It was to this fact the terrible distress of our hand-loom weavers at that time was owing. But a rapid expansion of our foreign trade quickly followed, with the result that the supply of labour was speedily absorbed. In the case of the Russians, however, there is no such change to be expected, as nowhere around them can the materials or conditions of such an expansion be found, and their distressful condition would seem as if it must to a considerable extent remain a permanency; unless, which is just possible, the conduct of Lancashire operatives being continued on the same irrational lines, may induce an extensive assisted emigration of the Polish workers of Lodz to Lancashire and Yorkshire, to take up the places of those who so utterly fail to appreciate the fact of their being doing well.

ENGLAND AND HER COLONIAL TRADE.

The question of Imperial Federation between England and her Colonies is decidedly advancing. As one step towards bringing it within the region of practical politics, may be noted the discussion in the Dominion House of Commons, Canada, on the 26th ult., to which we have already made reference. It will be remembered that Mr. McNeill placed before the House a resolution in favour of preferential trade with this country, to be accorded by the Dominion lowering its import duties upon English merchandise, provided we on this side would give Canadian productions special privileges. This could only mean that we should impose duties upon the competing productions of other countries—a course that is hardly practicable at the moment, whatever it may become hereafter. An amendment was proposed by Mr. Davies which shewed a more adequate grip and appreciation of the facts of the case. It was much mangled in transmission to this country, and certainly, as received here, it lost much of its important significance. It really should have read as follows:—

Inasmuch as Great Britain admits the products of Canada into her ports free of duty, this House (Dominion House of Commons) is of opinion that the present scale of duties exacted on goods mainly imported from Great Britain should be reduced.

This means much more than it did as originally transmitted, and if carried into effect in the Dominion and imitated in our other Colonies it would speedily evoke a feeling in this country in favour of some reciprocal movement, which it would be difficult for any government to withstand.

MULBERRY SILK.

The *Revue Scientifique* gives some curious details concerning a method devised by M. Khourl for the extraction of a filament from the bark of the mulberry tree. A certain quantity of the bark is placed in a basin of fresh water. After about twenty days it is taken out to be dried in the sun and cleaned. In order to eliminate the gummy substances, it is then steeped for one day in a bath containing chloride of lime in the proportion of 0.05 of the bark treated. The latter is then boiled in hot water for five or six hours, is afterwards plunged in a basin of fresh water for a day, and is dried in the sun. There is thus obtained a product previously quite unknown, which can be transformed into a filament, and utilised by carding for the manufacture of stuffs suitable for bed-quilts, curtains, etc. As this filament is vegetable, it is better to card and spin it before bleaching, in order to preserve its strength and elasticity; bleaching is, therefore, best effected only after its transformation into yarn. This product has been the subject of persevering research in Italy, where it is known as *gesso lino*.

OLDHAM AND THE LOCK-OUT.

Our Oldham correspondent writes: "Although much dissatisfied with the patch-up of the Stalybridge strike and the subsequent lock-out, nearly all the mills in Oldham resumed work on Monday morning, the exception to the rule being one, owing to the non-completion of repairs and alterations which were being carried out during the stoppage. Neither the operatives nor the employers are wholly satisfied with the terms come to last week, although the latter, so far as Oldham is concerned, exhibit the least displeasure. Both parties think that the non-unionist question ought to have been settled, though looked at from different and perhaps opposite standpoints. The sequel has proved that this view is correct, and appearances go to shew that the battle will have to be fought over again. Many employers consider the stoppage has been of too short duration to have had the effect on trade which was very much wanted. It is now said that in many directions there are fairly large stocks on hand, and that if trade does not present improvement organised short time ought to be brought about, say playing Saturdays until Whitsuntide, and longer if necessary."

AN INDIAN MACHINERY ORDER.

The fact that a Calcutta house has given an order for 150 jute looms to a well-known Dundee firm of machinists again serves to draw attention to the progress which is being made by Bengal as a seat of the jute industry. Prior to 1855 the manufacture of gunny bags in India was entirely carried on by hand. In that year an Englishman, Mr. George Acland, erected a power-loom factory—the present Wellington Mill, a portion of the property of the Champ-dairy Company, which is a Glasgow concern. The Barnagove Mill, now belonging chiefly to Messrs. George Henderson, was the next to be erected; and the Gourepore Company, promoted by an Irishman, Dr. Barry, followed. Several of the Calcutta mills are controlled by shippers having houses in Calcutta and London. At least four others belong to Glasgow firms, and another is controlled in Dundee. It may be said in a general way that Scotchmen command the Calcutta jute trade, the business having apparently possessed as great an attraction for them as do insurance and banking in England and elsewhere. The stock of many other mills is owned in Calcutta itself. The Kamarhatty Mills, started by Messrs. Jardine, Skinner, and Co., with over 300 looms, and the

Hooghly Mills of Messrs. Gillanders, Arbuthnot, and Co., are instances of factories belonging to local capitalists. The latest order is for looms sufficient to stock a moderately sized mill, and serves as an indication that Calcutta is still going ahead in the jute trade. As time progresses, it becomes obvious that Dundee must expect an increase rather than otherwise in the competition of our Eastern dependency for the jute trade of the Eastern and other markets. The best plan is to maintain a stand against this competition, and the one which appears to have commended itself to this society directly concerned, is for Dundee to develop by every possible means its fancy trade, which has already attained considerable dimensions.

THE SILK INDUSTRY IN THE UNITED STATES AND FRANCE: A SUGGESTION.

An American journal summarizes the salient points of the history of the silk industry in that country. There is, of course, nothing new in the matter beyond the condensation of the information within a small compass. While the American silk industry is usually dated from 1840, there were silk-workers in the country long before that year. The first factory of which there is any record was founded at Mansfield, in Connecticut, in 1810, and in 1815 Mr. Horstman founded in Philadelphia a small factory, which is now the oldest in existence in the United States. In 1829 the first home-made silk riband was produced at Baltimore; but it was undoubtedly after the panic of 1839 that the industry began to assume fair proportions. In 1860 the value of the native silk productions was about \$6,500,000; in 1870 it was \$12,500,000; and in 1880 \$35,000,000. New Jersey took the leading place in the industry, followed by New York, Connecticut, Massachusetts, and Pennsylvania, in this order. It is estimated that in 1891 there were 584 factories engaged in one branch or other of the silk industry, and that the value of the product was about 60 millions of dollars. It is said that American manufacturers have now taken the entire home market for certain styles of silk fabrics from the Swiss, the French, and other foreign competitors, who previously supplied low and medium-priced staple silks. Although the progress of the home silk industry is great, the imports of silk fabrics are still very large. During the last fiscal year the value of the imports of manufactured silk was \$37,880,000 and of raw silk \$19,076,081. We venture to say, however, that in no other country of the world have the conditions existed in which such a policy of protection as has been followed in the United States would have yielded the same or similar results. It is not to the credit of protection pure and simple that this extension of the trade must be placed, but to the unparalleled natural riches of the country. The development of these has taken place in an era of unprecedented material, scientific, and mechanical progress, which has rendered them available for commercial purposes. This has poured wealth into the hands of the inhabitants of the United States, and it is the absolute monopoly of this rich market which has been conferred upon the domestic silk trade that has brought about the great extension here recorded. In seven years in this country we could produce a greater result than this if we applied the same principles of rigid protection, and gave our silk manufacturers a monopoly of the home market. This, however, would simply be a tax upon the industry and commerce of the rest of the community, from which our wealth has been derived, instead of, as is the case in the States, from the natural production of the land. To tax the former in a degree equal to that of the latter would be a great injustice,

as they do not contain the same elements of permanence and comparative inexhaustibility. It is not likely, therefore, that the silk trade of this country will ever see the community taxed to such a degree as will enable them to amass the wealth that is being gathered by their fellows of the same craft in the States. Still it may not be impossible, considering the way in which this country is being treated by France and Spain, that we shall be compelled to take notice of the fact that the privileges they enjoy of comparative freedom of admission to our market were purchased by their giving us terms from which they have withdrawn, and to withdraw from them the concessions we made. These concessions, it is well known, were the abolition of the duty upon manufactured silks, the reduction of the duty upon light wines, and, in the case of Spain, a heavy reduction of duty upon the highly alcoholized productions of her vineyards. Why should we not do this? A contract broken by them should not be binding upon us.

A TAILORS' BLACK LIST.

Shall tailors be included amongst textile artisans? We think they may. They cut, carve, and sometimes spoil the handsome fabrics prepared for their hands at great expense of time, labour, and material. They fit these fabrics to the human form divine, ladies included, and upon the manner in which they handle them, and the results they produce, often depends the success or otherwise of a manufacturer's efforts to please the public taste. The tailor, in fact, is the last artisan in the long list of those engaged in the construction, decoration, and finishing of the textures fabricated in our looms. His occupation is to a large extent a survival of the now almost obsolete series of domestic industries, but his position has of late years been strongly assailed by the "ready-made" or factory system of producing garments. But against the further progress of this system there is a barrier which will always preserve the best section of the tailor's business from extinction. This is the necessity of "fitting" the individual. So we have shewn the tailor to be a textile artisan, and thereby have justified the reference we propose to make to him. Like others who have come under this designation, the tailors have joined together in trade-unions, and we suppose that every considerable town has its organization. As usual, we find that they like to have certain liberties and privileges that trades-unionists always deny to others. They don't like black sheep, and do all they can, by every means of boycotting that they can devise, to prevent non-unionists amongst them getting or retaining employment. But, on the other hand, they don't like the application of these methods to themselves, as is abundantly shewn by a case that has just occurred in Sheffield. During a strike the Sheffield branch of the Master Tailors' Association circulated a "black list," which, among other names, contained that of a journeyman tailor named Jenkinson, who brought an action against the officers of the society for conspiracy to prevent his obtaining employment. This, of course, was a great crime when committed by an employer, and he must be punished; but it would have been a perfectly righteous thing for a body of working tailors to have laid down their needles and sent their geese to perch, if a non-unionist stitcher or cutter had come amongst them. It would have been patriotic to have deprived him of all chance of obtaining employment, and thereby of maintaining himself and family. But it is entirely different when the employer exercises the same right. The law must be appealed to. A complaint was therefore laid in the County Court. The judge, however, decided in favour

of the defendants, holding that the masters were within their rights in the course they took; that they were not actuated by malice; and that their combination was not for the purpose of injuring the men, but merely to protect themselves in their business. This did not "suit" or "fit" the notions of the tailors at all. There were many creases and wrinkles in it, and altogether it was condemned. The County Court Judge was regarded as a very indifferent tailor, so they decided to go higher, and get a patch put upon his work. Accordingly, they lodged an appeal in the Court of Queen's Bench, and on the 5th inst. the case was decided by Justices Matthew and Smith. The case for the appellants was heard, and their lordships, without hearing counsel for the respondents, dismissed the appeal with costs. We trust the master tailors of Sheffield may get their costs! The lesson for spinners and manufacturers in the textile industries is obvious: when they, unfortunately, get experience of some mischief makers, they will be quite within their right in dismissing him, and also in warning their friends and neighbours. This is a decision, when found, which deserves to be made a note of.

OUR TRADE WITH THE PHILIPPINES.

The importance of the Philippine Islands as a market for British goods is much greater than many persons imagine. Since their discovery by Magellan, and their annexation by Spain over 300 years ago, many fortunes have been made by Spanish and other traders from the products of the group, whose population is variously estimated from 7,500,000 to 9,500,000. The figure is much in excess of that which appears to represent in the popular mind the number of inhabitants in these valuable possessions of the Spanish Crown. In area, too, the Islands exceed that of Great Britain. Luzon and Mindano, on the former of which the town of Manila is situated, are each about 40,000 square miles in area. As the source of Manila hemp, the Islands possess special interest to many British manufacturers, this country being the principal market for the fibre. Last year the shipments from Manila, Cebu, and Iloilo were as follows:—

	Bales.
Great Britain	443,142
U.S. and Canada	156,500
Continent	4,206
Australia, China, &c.	31,500

The total exports were 635,547 bales or 79,483 tons, against 63,269 tons in 1870. The quantity sent to this country last year was equivalent to 55,000 tons. According to English official returns, we re-exported in that year 50,000 tons out of total imports amounting to 102,000 tons, leaving 47,000 tons available for home consumption. It is obvious from this that more than one-half of our imports of hemp are intended for foreign manufacturers. The report of Consul Turner, of Manila, on the trade last year does not exactly agree, so far as statistics are concerned, with our own Board of Trade returns, which place the hemp imports from the Philippines at 49,959 tons for the year. Notwithstanding the importance of the English market to the Philippines, our trade last year was a discouraging one, owing chiefly to the very heavy duties levied on all non-Spanish goods arriving after March 31st. Spanish manufacturers during the year made considerable headway with their goods, which enter duty-free, and in many kinds of grey goods they have, to a considerable extent, prevented importations of Lancashire goods. In white staples, printed and woven goods, they have competed with British and Continental manu-

factures in a less degree, and, generally speaking, so far with little success. We observe that Mr. Blaine's reciprocity schemes have met with some attention in the Islands. The recent proposition to reinforce duties in America on non-reciprocity countries tends to depress prices there, as it shuts out the chief consuming market for Philippine sugar. Great Britain, which previously could not compete with the prices paid by America, will have a considerable quantity shipped under the proposed new duties. It will be strange, seeing that during the past twelve months only one vessel flying the American flag was seen at Cebu, if the cunningly devised scheme of Mr. Blaine should injure our trade with the Philippines. The interests of the Spanish Government are more closely bound up with the maintenance of commercial relations with this country than with trucking to the political scheming of the American Secretary of State. The new tariff, based on "protectionist" principles, which came into force last year, contains many provisions exceptionally irksome, entailing as they do daily visits to exporters' go-downs during the shipment of produce for the purpose of weighing produce in course of shipment, the old principle of receiving the exporting houses' declarations of weights on "words of honour" being now apparently considered insufficient. It has not transpired, however, that the State has increased its revenue by the adoption of this new system.

THE BOARD OF TRADE RETURNS FOR APRIL.

The Board of Trade Returns for the past month, even after making due allowance for the fewer working days and the disturbance due to the Easter holidays, are again distinctly unfavourable, curtailment in the volume of business done and lowering of prices being traceable all through. The total imports amount in value to £34,920,272, a decrease of £4,062,265, or about 10.4 per cent., and the exports of British and Irish produce to £17,865,876, a decrease of £3,053,190, or about 14.6 per cent. The value of the exports of foreign and colonial merchandise is £10,686 in excess of last year, being £5,545,838, but that is due entirely to the much larger shipments of sheep's wool. In textiles the articles of import that have been received more freely were flax and hemp. The low prices of raw cotton are telling upon the shipments, all countries except Egypt having sent less. Although the quantity of wool is less for the month, yet there is a large increase for the four months of the year. The prices of this staple seem to have touched bottom, for there was a recovery during the last sales from the previous ones. The decrease of the exports is even more marked than in the imports, linen piece goods alone, amongst textiles, shewing increases. The requirements of the United States account for nearly all this increase. Cotton yarn and piece goods shew decreased shipments at reduced prices. In the case of yarns, Japan is the only country which in a conspicuous manner has taken more. Of cotton piece goods Chili took 10,002,200 yards, compared with 1,967,100 yards; shipments last year being, of course, checked by the civil war. The Argentine Republic has nearly doubled its purchases, and China and Hong Kong took more, but Turkey took less. Of woollen and worsted tissues the United States took more, but France less. (In the Board of Trade returns for March, the imports of flax, tow and codilla, were erroneously set down at 6,054 cwts. The correct figures are 37,720 cwts. or 1,886 tons, those for March, 1891, being 1,715 tons.) Appended are particulars of the imports and exports of textiles, etc., for the month:—

I.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE. Principal Articles.

Principal Articles.	Quantities.		Value.		
	1891.	1892.	1891.	1892.	
Cotton, raw	Cwt.	4,375,539	1,188,562	1,188,562	
Flax .. .. .	..	178,157	210,560	210,560
Hemp .. .. .	..	171,177	216,000	216,000
Jute	Tons	59,118	29,297	29,297	
Silk, raw	Lb.	385,808	100,493	100,493	
Wool, sheep and lambs' .. .. .	..	98,953,428	83,961,715	83,961,715
Woollen stuffs	Yds.	52,531,166	3,019,489	3,019,489	
			Increase or De-	crease per cent.	
			compared with	April, 1891.	
			Quantity.	Value.	
Cotton, raw	4,493,025	2,807,724	113.0	119.6
Flax manufactures	219,791	225,679	+2.7	+2.7
Flax	395,776	311,171	-18.1	-18.1
Hemp	365,699	315,755	-13.7	-13.7
Jute	570,771	599,991	+5.1	+5.1
Silk, raw	295,738	64,399	+6.9	+6.9
Wool, sheep and lambs'	1,380,368	3,025,583	+15.7	+15.7
Woollen stuffs	489,997	473,451	-3.3	+10.3
			+Increase.	+Decrease.	

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

Principal Articles.	Quantities.		Value.		
	1891.	1892.	1891.	1892.	
Cotton Yarn and Twist	Lb.	21,054,300	18,774,400	18,774,400	
.. Piece Goods	Yards	395,213,600	373,493,400	373,493,400	
Jute Yarn	Lb.	3,314,000	1,831,500	1,831,500	
.. Piece Goods	Yards	23,339,700	20,300,000	20,300,000	
Linen Yarn	Lb.	1,223,400	1,226,500	1,226,500	
.. Piece Goods	Yards	10,474,700	13,154,300	13,154,300	
Wool, sheep and lambs'	Lb.	1,834,600	1,847,600	1,847,600	
Woollen and Worsted Yarn	Yds.	3,550,600	3,254,800	3,254,800	
.. Tissues, heavy and light, broad and narrow	Yards	3,005,600	2,709,800	2,709,800	
Worsted Tissues, heavy and light, broad and narrow .. .. .	..	8,786,600	7,831,200	7,831,200	
Woollen Carpets .. .. .	..	708,800	608,800	608,800	
.. Flannels .. .. .	..	627,200	466,800	466,800	
.. Blankets	Pairs	80,455	64,715	64,715	
			Increase or De-	crease per cent.	
			compared with	April, 1891.	
			Quantity.	Value.	
Cotton Yarn and Twist .. .. .	..	973,878	764,811	-11.0	-11.0
.. Piece Goods .. .. .	..	4,720,201	3,718,395	-15.3	-15.3
.. Other Manufac- tures .. .. .	..	631,915	551,366	-11.8	-11.8
Linen Yarn .. .. .	..	1,509,843	1,727,797	+14.7	+14.7
Jute Yarn .. .. .	..	34,139	16,031	-53.0	-53.0
.. Piece Goods .. .. .	..	197,573	204,839	+3.6	+3.6
Linen Yarn .. .. .	..	76,413	79,474	+3.9	+3.9
.. Piece Goods .. .. .	..	754,497	799,332	+6.2	+6.2
Machinery and Millwork .. .. .	..	1,434,174	1,385,339	-3.4	-3.4
Silk Manufactures .. .. .	..	127,499	109,659	-14.0	-14.0
Wool, sheep and lambs' .. .. .	..	72,143	52,299	-27.6	-27.6
Woollen and Worsted Yarn .. .. .	..	336,466	296,012	-11.9	-11.9
.. Tissues, heavy, light, narrow, broad .. .. .	..	393,651	367,441	-6.9	-6.9
Worsted Tissues, heavy, light, narrow, broad .. .. .	..	491,855	451,682	-8.1	-8.1
Woollen Carpets .. .. .	..	71,319	53,528	-25.0	-25.0
.. Flannels .. .. .	..	23,520	18,916	-18.7	-18.7
.. Blankets .. .. .	..	33,408	29,727	-11.3	-11.3
			+Increase.	+Decrease.	

III.—EXPORTS OF BRITISH AND IRISH PRODUCE AND MANUFACTURES. Principal Articles.

Principal Articles.	Quantities.		Value.		
	1891.	1892.	1891.	1892.	
Cotton Yarn and Twist	Lb.	21,054,300	18,774,400	18,774,400	
.. Piece Goods	Yards	395,213,600	373,493,400	373,493,400	
Jute Yarn	Lb.	3,314,000	1,831,500	1,831,500	
.. Piece Goods	Yards	23,339,700	20,300,000	20,300,000	
Linen Yarn	Lb.	1,223,400	1,226,500	1,226,500	
.. Piece Goods	Yards	10,474,700	13,154,300	13,154,300	
Wool, sheep and lambs'	Lb.	1,834,600	1,847,600	1,847,600	
Woollen and Worsted Yarn	Yds.	3,550,600	3,254,800	3,254,800	
.. Tissues, heavy and light, broad and narrow	Yards	3,005,600	2,709,800	2,709,800	
Worsted Tissues, heavy and light, broad and narrow .. .. .	..	8,786,600	7,831,200	7,831,200	
Woollen Carpets .. .. .	..	708,800	608,800	608,800	
.. Flannels .. .. .	..	627,200	466,800	466,800	
.. Blankets	Pairs	80,455	64,715	64,715	
			Increase or De-	crease per cent.	
			compared with	April, 1891.	
			Quantity.	Value.	
Cotton Yarn and Twist .. .. .	..	973,878	764,811	-11.0	-11.0
.. Piece Goods .. .. .	..	4,720,201	3,718,395	-15.3	-15.3
.. Other Manufac- tures .. .. .	..	631,915	551,366	-11.8	-11.8
Linen Yarn .. .. .	..	1,509,843	1,727,797	+14.7	+14.7
Jute Yarn .. .. .	..	34,139	16,031	-53.0	-53.0
.. Piece Goods .. .. .	..	197,573	204,839	+3.6	+3.6
Linen Yarn .. .. .	..	76,413	79,474	+3.9	+3.9
.. Piece Goods .. .. .	..	754,497	799,332	+6.2	+6.2
Machinery and Millwork .. .. .	..	1,434,174	1,385,339	-3.4	-3.4
Silk Manufactures .. .. .	..	127,499	109,659	-14.0	-14.0
Wool, sheep and lambs' .. .. .	..	72,143	52,299	-27.6	-27.6
Woollen and Worsted Yarn .. .. .	..	336,466	296,012	-11.9	-11.9
.. Tissues, heavy, light, narrow, broad .. .. .	..	393,651	367,441	-6.9	-6.9
Worsted Tissues, heavy, light, narrow, broad .. .. .	..	491,855	451,682	-8.1	-8.1
Woollen Carpets .. .. .	..	71,319	53,528	-25.0	-25.0
.. Flannels .. .. .	..	23,520	18,916	-18.7	-18.7
.. Blankets .. .. .	..	33,408	29,727	-11.3	-11.3
			+Increase.	+Decrease.	

INCONSISTENCY IN THE UNITED STATES.

To outsiders there is hardly anything more curious than the inconsistency of private and public action in the United States. Conduct there seems never to be regulated by principle, but always by the impulses of the moment or the promptings of selfish sentiment. Especially is this the case in matters of industry and commerce. A couple of illustrations of this have just come to hand. In the first we learn that in consequence of an extensive strike of engravers at many of the United States printworks, some of the leading calico-printers have arranged for the importation of copper rollers, already engraved, from this side of the Atlantic. This seems to be a very proper thing to do in the circumstances, as doubtless the dispute has arisen upon the question of wages, and if the calico printers really cannot afford to pay the price demanded we see no reason why they should not obtain their rollers elsewhere, if they can do so at prices satisfactory to themselves. But the trouble is that there is in the country a public that consumes printed calicoes, and when the calico printers struck against the prices the public were paying for prints, they banded themselves together and, in alliance with other people of the like disposition and having the same ends in view, objected to the American public importing calicoes from the European side of the Atlantic, and put several and sundry obstacles in the way called tariff laws, the biggest of which is known as the McKinley Act. Cannot the calico printers' engravers "go and do likewise?"

The second instance is one in which the gander has been served with the sauce that the cook made for the goose, and the result has not been at all pleasant. Amongst hocus-pocus reciprocity arrangements invented by Mr. Blaine, the political conjuror of the United States, and imposed upon some of the minor and weaker States of the American Continent, was a reciprocity treaty with Brazil, concocted at Washington during the so-called Pan-American Convention. Not content with a favourable differential tariff allowing American productions to enter Brazil under less impositions than those from other countries, even the Custom House regulations of the United States were copied, requiring every detail of manufacture, such as have to be given to the American Consuls by manufacturers and merchants sending goods to the States. Brazil, not to be behind her teacher, has applied these regulations to the productions of the manufacturers of the United States, much to their disgust, as in coaching the representatives of Brazil in this line of study they did not mean the lesson when learnt to be applied to themselves. They meant it for their competitors. The application however being so unpalatable, they have made a protest against it, like the English merchants. This proceeding being so obviously inconsistent with their own treatment of foreign merchandise has evoked in the mercantile circles of Rio de Janeiro a good deal of ridicule and derision. The protests which have been made against these regulations have caused them to be withdrawn for modification, but really it would only be a bit of poetic justice to retain them in their integrity against all American merchandise.

A WARNING TO COTTON MACHINISTS.

Some time ago our Boston correspondent drew attention to a movement which had been commenced in that city with the object of detecting what it pleased those interested to stigmatise as "frauds upon the customs laws by importers of foreign machinery." We remarked at the time that the existence of such a report afforded ground for the belief that an attempt would be made to harass honest business firms connected with the machinery trade by the same methods as have been so costly to importers of dry goods at New York and other parts. The prime movers in this organisation of American builders of machinery are members of the Manufacturers' Club, of Philadelphia, who say that the evidence is very strong that foreign machinery is brought into the country in large quantities upon invoices which do not indicate its actual value. One of the methods said to be employed for carrying out this system of undervaluation is to ship parts of machinery separately, in a condition just short of complete finish. It is also asserted that, owing to insufficient information, the Board of Appraisers have rendered some decisions in these cases by which the foreign manufacturers have obtained a great advantage in the home market. The organisers of the movement say, "This country is second to none in the excellence of its machinery of every kind, but the skill of American builders and the superiority of American mechanics cannot avail to give success in unequal competition with the admitted excellence of much European work and the low wages paid to European workmen. This nation has taken the foremost place among the machine-building nations of the world, because the industry has had protection both from the tariff and from the patent laws, and it is of high importance that the protection shall be sufficient if we are to move forward over the brief remaining distance which must be passed before we obtain outright independence in the matter of machinery supplies. The protection promised

by the law is not more than enough, but whether it be enough or more than enough, the involved industries have a clear right to rigid enforcement of the law." It is proposed to supply the customs officials with expert evidence bearing upon any doubtful points, and as the experts will be American machinists or connections of theirs, it is a foregone conclusion which way their evidence will go. It is also proposed to obtain a reversal of previous customs decisions where such favour the European manufacturer. Those interested in these matters would do well to watch closely the further progress of the scheme which has been put forward by the Manufacturers' Club of Philadelphia.

NEW DESIGNS IN TEXTILES.

The holiday maker just returned from a sojourn in some quiet rural spot, where fashion is an unknown factor of daily life, and promenading, as seen on the largest scale in "The Row," or, in smaller degree, in St. Ann's-square, does not exist, must rub his eyes with wonder at the gay toilettes now to be seen in the streets of the more important cities. Fancy figured cashmeres have been extensively bought of late. At first blacks were chiefly in request, but later, slates, greys, and fawns were bought, and they are now great favourites. Mohair figures on sateen grounds are prominent amongst the popular styles, and silk stripes in *crêpons* are common enough. Fancy Bedford cords and all wool French corduroy are amongst the multitude of fabrics that go to add to the attractiveness of the female form divine this season. The result of all this wealth of colour and design in dress goods is a gaudy kaleidoscope that has succeeded with startling suddenness the gloom which is accompanied as by an outward and visible sign by the wearing of furs, ulsters, wraps, and other winter habiliments. But while one may commend the cloths seen in the new season's designs, praise must be withheld from the shapes into which Parisian *modistes* have decreed that they shall be made up. Ugly jackets with humps on the shoulders like those of a miniature camel, loosely fitting, with puffs, sleeves like bags, and other dreadful monstrosities are *de rigueur*. Then we have marigolds mixed with dark blues and scarlets—suggestive of the fishwife's "plain red and yellow"—and other combinations which would ruin any artist having the temerity to put them on canvas.

MCKINLEYISM IN FRANCE: SERIOUS DECLINE IN EXPORTS.

During the first few months of the year the shipping trade with France was very active, the exports shewing a considerable increase over those of the corresponding period in 1891. The spurt, however, was due to the tariff, and the returns for April shew, alas! that we must expect a decline, for some time at least, in the volume of our French trade. The nature of the change is best illustrated by the following table of exports in April, 1891, and April, 1892:—

	COTTON.	
	1891.	1892.
Yarn	73,700	30,800
Piece goods.....	54,800	18,400
LINEN.		
Yarn.....	47,300	57,100
Piece goods.....	7,400	1,550
SILK.		
Thrown, twist, and yarn	6,290	5,920
Broad stuffs.....	45,000	48,600
Lace.....	2,300	1,100
Woolen and worsted yarn ..	32,500	26,000
Woollens.....	39,400	31,400
Worsted.....	90,600	59,300

With two exceptions these figures shew a decrease all along the line, a natural con-

sequence of France's recent drastic tariff legislation. The excessive supplies poured into the Republic during the early months of the year account in part for the falling-off last month; but the change cannot be entirely ascribed to that cause. When present stocks have been exhausted there will, no doubt, be a revival of some kind, but many branches of our trade have been permanently injured, and the turnover must be regained by altering the character of some of the goods shipped.

THE FIASCO IN THE SETTLEMENT OF THE COTTON TRADE DISPUTE.

We are embarrassed this week by the number and richness of the topics offering themselves for comment, each of which deserves an article to itself to have anything like justice done to its merits or importance. Happily, however, a number of them will bear adjourning to a more convenient season. Amongst those that cannot be subjected to this treatment is the fiasco in the truce of last week between the contending associations of employers and operatives in the cotton trade, on the basis of which work was resumed in the spinning mills of South Lancashire, and ought to have been resumed in the mill of the Stalybridge Spinning Company, but was not, though this was the original cause of the quarrel. Our readers will remember that we had no great faith in the value of the settlement effected last week, as we distinctly spoke of it as a truce that left everything to be discussed over again, more clearly defined, and subsequently reduced to such terms as could be embodied in something like a permanent treaty of peace. The negotiators on both sides came in for a heavy share of blame amongst those they represented, but, to their honour be it said, the employers abode by the engagements arrived at, and endeavoured to carry them into effect. They would have been quite justified in at once abruptly closing their mills again until the Stalybridge operatives had returned to their employment according to the terms. They would have been justified in much more than this, considering the brutal manner in which the non-unionists have been treated and threatened, and the necessity the Corporation authorities have been placed under of again importing a large amount of foreign police aid to protect the non-unionist workers from the suasion of mud, stones, brickbats, and ironbound clogs, which, without such protection, would have been freely applied, and which, even in spite thereof, were to some extent brought to bear. With anything like efficient generalship on the part of the Employers' Association, this question of unionists *versus* non-unionists would have been removed to a large extent from the field of contention. In Oldham alone it was discovered during the stoppage, that, in spite of the hounding of the workers into the unions that has been in progress for the past several years, there were about 6,000 workers who have preserved their independence. There was no strike pay for these, and they were innocently involved through no fault whatever of their own in the *mêlée* between the contending parties. These people ought to have been invited to report themselves for registration by and with the Employers' Association, which should then have started 15 or 20 mills with these free workers, distributed in localities accessible from their dwellings. By so doing the employers would have preserved them from being involved in a contest to which they were no parties. The maintenance of these 15 or 20 mills as non-unionist shops would have been of enormous advantage both to the independent operatives and the employers. At present it is "either join the union, or submit to constant persecution,

or starve." These are the only alternatives before them. It was due to these workers, therefore, that the employers should place something else before them—and that was employment where they would be absolutely free from enforced contributions to the unionist funds, persecution, or ejection from their work by or at the instigation of the petty tyrants of their trade, by whom they are surrounded. We have a strong belief that if this course were yet adopted, these free mills would soon have the choice of the steadiest, most industrious, and most skilful workers in the trade, who are now hopelessly looking for some means of emancipating themselves from the thraldom to which they are subjected, but who, unaided, can never maintain their freedom. Not only would this occur, but there would soon be applicants sufficient to gradually and rapidly furnish additional mills with staffs of free hands, as, whilst they were relieved from the tyranny of the trades-unionists, they would also be from 5 to 10 per cent. of their present wages in pocket, as they would cease to contribute to the union funds, and be freed from the risk of strikes and lockouts. Working in honest, harmonious co-operation with their employers, there would not be the extravagant waste of profits and material and wages that occurs under the present *régime*. We commend this matter to the earnest and immediate consideration of the various local associations of master spinners, and also to the Federation. They are strong enough when united to insist upon and enforce an entire change of policy and conduct upon the associations of their workpeople, providing they demand only what is just and reasonable. Their opponents, on the other hand, are strong only because they have not been resisted: everything has been given them that they have asked for, because few firms, single-handed, have cared to fight them. As they have grown in strength they have grown in arrogance and tyranny, and to maintain the terror of their organisations that they have succeeded in evoking, they have kept up a succession of attacks upon individual firms both in the spinning and manufacturing branches, of which, in the former, the demands upon and the present strikes at the Stalybridge and Accrington Spinning Companies are illustrations. And in the midst of all this ferment in the trade, the prime mover, Mr. James Mawdsley, who has led his constituents into this muddle, and caused them to drag the whole of the trade after them, nevertheless finds time to go to the Metropolis upon deputations to members of the Government as a representative man, and a man having authority. We should have thought that his energies would have been better employed in the endeavour to restore order out of the confusion for which he is primarily responsible. And we think also that a large number of the workers in the many households that have been involved in serious loss, debt, and in many instances in want, will agree with us upon this point.

Referring to Mr. Mawdsley's fondness for going upon deputations to London, or on journeys thereto in his capacity of Royal Commissioner, we observe that he was on Tuesday the chief spokesman in a deputation from the Parliamentary Committee of the Trades-union Congress to the Home Secretary, the object of which was to secure a further increase in the number of Factory and Workshop Inspectors. Mr. Mawdsley is reported to have said that "there was no wish on their part to harass employers, especially in view of the increasing difficulties which they laboured under in competing with foreign countries." This was an admirable sentiment wherewith to head a request to a Government official for addi-

tional instruments wherewith to harass the employers. The latter, however, we feel assured, would be pleased to see a little more conformity between such kindly sentiments and Mr. Mawdsley's practice before they accept the statement at par value. "Still," continued Mr. Mawdsley, "the workpeople thought there was much room for improvement, both in the number of inspectors and also in the quality of inspection. In Lancashire, with one exception, they had very little, if any, cause to grumble at the present time. This was due to the good feeling which had been established between the inspectors and the Home Department on the one hand, and the workpeople of Lancashire on the other." If we substitute the words "trades-union officials" for "the workpeople," we shall obtain a far more accurate representation of the truth in this case. The Home Department and also the House of Commons, we regret to say, has for a considerable time past been far too much for the welfare of the country, under the domination of the Trades-Union Congress and kindred associations. It is one of the evils resulting from our system of government that whenever a Parliament approaches the natural termination of its life, it lays the members open to the exercise of all sorts of improper influences, amongst which by far the most mischievous of the present time is the semi-socialistic trades-unionism now in vogue. We are glad to perceive, however, that there is an evident determination to bring this sort of dictation to an end. The Right Hon. Mr. Matthews in his reply said that:—

Every one of the speakers looked upon the system of inspection from this point of view, that they all expected supervision and control by Government officials. That was not a system of inspection that had ever been intended. He quite agreed that the number of inspectors they had was not sufficient for the supervision and control of every factory and workshop throughout the country. They would require not 80 or 100 more but 1,000 more inspectors if the Government were to undertake that task. He could not help feeling that it would be a work of impossibility for any government to undertake what the deputation had in their minds. He believed that their expectation was an impossible one. He did not think it was practicable, and what was more, he thought it would be mischievous, if it were practicable, if they attempted to substitute Government management of every industrial concern for that private management which had been the source and secret of their commercial prosperity. With the caution that Government inspection did not mean supervision and control, he could only add that he would give the fullest consideration to the suggestions made, with the view of seeing what could be done to meet their wishes. He would like to ascertain the distribution of workshops where there were women alone, and which would, therefore, be proper subjects for inspection by female inspectors, in order to see whether he could make a reasonable year's work for a woman out of those workshops.

We need add nothing to this at present.

On April 23rd a fire destroyed the power-loom weaving shed of Week, in Rothenhal, near Greiz. The amount of damage done is very serious, and more than 100 persons are thrown out of employment.

FLOORCLOTH DESIGN COMPETITION.—Messrs. Michael, Nairn and Company, manufacturers, Kirkcaldy, recently offered prizes for designs for floorcloth and linoleum. Competitors to the number of 470 sent in 1,080 designs, for the best three of which in each of five classes prizes have been awarded. Only one Scotsman, however, has been successful, most of the prize-takers belonging to London and the South of England. Messrs. Nairn have purchased several of the unsuccessful drawings.

Mr. S. SMITH, M.P., criticising statements made on economical questions by the Rev. Hugh Price Hughes, M.A., in an address at St. James's Hall, Liverpool, on the 20th April, points out that nothing could be more inaccurate than the system of adding together the incomes of the whole population and assuming that this, less the wages of labour, represents the income from capital. Under this system, Mr. Smith points out, the same income is virtually counted over and over again in a vast number of cases. Referring to the profits of the cotton industry, Mr. Smith goes on to say that they do not average more than 3 or 3½ per cent., and that if wages were raised 50 per cent. most of the trade would leave the country.

Foreign Correspondence.

GREAT STRIKE IN LODZ, RUSSIAN POLAND.

Lodz, May 6th, 1892.

A general strike has broken out amongst the workers in the textile industries in this place. Over 70,000 working people have turned out from work. They consist principally of spinners, weavers, finishers, and other workpeople connected with these classes of establishments. The strike commenced amongst these workpeople, but since it commenced, yesterday workers in other branches of industry have joined the strike. Up to the time of writing there is no disturbance of the peace. The people are promenading the streets in groups of from 10 to 15 persons in a group. Mounted cossacks, a few thousand military, and a few hundred policemen are patrolling the streets to enforce the preservation of the peace. As I am writing this, however, I am informed that in one part of the town a large crowd has attacked and robbed some poor people.

Yesterday Governor Hiller, the chief of the Petrokoff Government, arrived in Lodz, and today a meeting under the presidency of Mr. F. K. Poznanski, a highly esteemed citizen, and Mr. Herbst, principal director of Carl Scheibler's cotton spinning and manufacturing mills, is fixed to be held in the Town Hall here. The result of this meeting I will send you in a few days.

The strike has extended to the mills of Mr. Ferdinand Goeldner, cotton spinner, and immediately after to the mill of Messrs. Leonhard, Voelker, and Girhard, worsted spinners. The owners of both these mills are Germans from Saxony, and it is said that both firms, but especially the first-named, treat their workpeople in a very harsh manner. At the last-named mill the people work 15 hours per day, and earn only from three shillings to seven shillings a week.

Foreigners who have mills in Russia generally pay small wages, and look after making great profits, and after making large fortunes they leave Poland and go back to their fatherland. Of course this does nothing to improve the position of our working classes.

In the strike our people are asking for 10 hours labour per day and better wages. It is supposed that a part of their demands will be conceded. In the meantime placards have been posted at the corners of the streets advising the people to return to work, and not to show themselves in the streets, or they will be arrested and put into prison.

I hope everything will be settled in the course of a few days, as the manufacturers are willing to make some concessions to the people.

Business, speaking generally, is very good, and orders in lines are coming in at pretty good prices, and if this season's crops prove good, as is anticipated from the nice weather, business will be excellent.

[Our correspondent has no doubt failed to get forward any further information as promised, owing to the obstacles the Government usually puts in the way of the transmission of intelligence to the outside world of what is going on in Russia. Intelligence from both Berlin and Vienna during the week shows that the disturbances have been of a very serious character, as according to accounts received from eye witnesses of the disturbances the town for a time was in a condition of absolute anarchy. Not content with plundering and wrecking many manufactories and workshops, the strikers in many instances attacked and murdered the factory owners themselves. Governor Hiller has issued the following address:—

"The factory hands who are dissatisfied with the treatment of their employers are fully entitled to submit their grievances to the Courts, the factory inspector, or myself. Not a single just complaint or legitimate claim has remained or shall remain without legal redress. In the meantime, the workpeople of different factories in the town of Lodz have given up work in opposition to the existing regulations, apparently without proper cause, and without having given their employers the usual fortnight's notice. In view of restoring order, I advise all workpeople to return immediately to their duties. I strictly forbid

all crowding in the streets and in the factory yards. Any contravention of this order will compel me, independently of judicial action, to take energetic measures against the promoters of disturbances in virtue of the law which authorises the use of the military to suppress riots."

On Wednesday there were still over 60,000 operatives out, and the Governor was present in the town endeavouring to bring about a settlement of the dispute. In connection with it information from Cracow states that 300 foreign workmen have been expelled, while 40 of the rioters, including several Socialist agitators, have been sentenced to long terms of imprisonment.—Ed.]

TEXTILE MATTERS IN THE UNITED STATES.

Boston, May 5th.

AMERICAN COTTON STATISTICS: AN ACCUSATION.

The St. Louis Cotton Exchange recently passed a resolution reflecting seriously upon the methods pursued by Mr. Dodge in compiling official statistics relating to cotton. The exchange entered its urgent protest against the issuing and publication of the last report, as unwise, indiscreet, and uncalled for, and beyond the powers delegated to the department by the people; and requested representatives in Congress to give the producers protection against all such reports on the part of the government. It recommends that the department shall confine its reports to the facts, and the actual production of crops, and not to guess-work as to what the department believes is in the hands of the producers unmarketed.

The origin of the trouble is due to the publication of the report of the 11th March last, which was, according to the St. Louis Exchange authorities, based, not upon facts, but upon guess-work. The resolution is preceded by a statement that the report has been the cause of a great financial loss to the people of the United States, causing an immense decline in the values of the two greatest American export articles, to wit, wheat and cotton, by the issue of the following as to cotton: "These facts show clearly what is the matter with cotton growing; it is suffering from overproduction. In the last two years this country has produced more than 2,000,000 bales above the requirements of consumption."

In reply, Mr. J. R. Dodge, statistician of the Department of Agriculture, furnishes for publication the following statement:

The resolutions passed by the St. Louis Cotton Exchange are unworthy the intelligence of an American commercial association. That a band of speculators, suffering from their own rashness and mad judgment, should so stultify themselves as to deny the open facts of production and distribution which are published daily by the commercial press of two continents, passes comprehension. The statements complained of in the March report are those of the National Cotton Exchange and of Ellison, of Liverpool, an authority no cotton broker will gainsay.

The movement of the crop of 1890 exceeded 8,500,000 bales, but Mr. Hester, the authority of the New Orleans Exchange, says the crop was actually 8,900,000 bales, which is nearly as much as the average annual consumption of the factories of Europe and America for five years past according to Ellison; and India, Egypt, and Brazil added more than 3,000,000, making a total of 12,000,000 bales, while the consumption of Europe, America, and India has never reached 11,000,000. The visible stocks of January were about 1,500,000 larger than in January of 1890, and the Liverpool price of middling fell from 6½d. to 4½d. as the result of overproduction, aided, possibly, by the sale of futures by the St. Louis exchange.

Mr. Dodge, to put the matter plainly, would have better pleased the St. Louis speculators if he had issued statistics better calculated to favour their operations. As it happened, he told the truth, and this, it appears, is to act "in the interests of foreign nations, and against American producers." What patriotic people the members of the St. Louis Exchange must be!

MORE RECIPROCITY.

Reciprocity with Mexico has been engaging the attention of the House Committee on Foreign Affairs. That committee has adopted a resolution recommending the appointment of a joint reciprocity commission on the part of Mexico and the United States, to be charged

with the task of negotiating a treaty whereby greater reciprocity in the commercial relations of the two countries may be established. The report says that the market for the better grades of goods now controlled by Great Britain, France, Germany, and Belgium, is open to American manufacturers if they can obtain the advantage of discriminating duties, and that if instead of discriminating duties unrestricted reciprocity prevailed between this country and Mexico, the exercise of a little enterprise on the part of our manufacturers and our producers of food would soon give them almost absolute control of Mexican markets.

A NEW MILL.

A new concern which is about to locate in Alabama is the Coleman Cotton Mills, a corporation made up of a number of practical Massachusetts men, who have organized, with £80,000 capital, to establish the manufacture of specialties in cotton goods at Nottingham. A large tract of land, sufficient for an extensive plant, to include corporation dwelling-houses, has been donated. About 20,000 spindles will be started at first.

BRITISH COLUMBIAN TEXTILE IMPORTS.

From the schedule which was embodied in the last report of U.S. Consul Myers, of Victoria, British Columbia, it appears that in the fiscal year ending June 30, 1890, while of all other cotton goods, Great Britain furnished to her dependency quantities valued all the way from three to over eighty times the United States products imported, the value of the denims and cotton flannels received from the United States was nearly seven times that of the English importation in that year:

	U.S.	Gr. B.	Other countries.
1. Denims, cotton flannels	\$14,585	\$2,885	.....
2. Prints	296	16,235	\$219
3. Clothing	7,579	23,030	2,343
4. All other manufactures	6,310	24,731	928

The denims, which it is inferred constituted the larger part of the importations in the first instance set down in the table, came mainly from southern mills via San Francisco. It is believed that the purchases of these goods by British Columbian merchants are mostly made directly in San Francisco.

THE LACE CURTAIN INDUSTRY.

The progress which has been made in the lace curtain industry is shewn by the following summary of what has been done by existing firms:—

The Wilkesbarre Lace Manufacturing Company, of Wilkesbarre, Pa., was the first plant started, the company having been organized about eight years ago. Messrs. Clarence Whitman and Co., of New York, are the selling agents. They have twenty-five looms.

Then came the American Lace Curtain Manufacturing Company, located at Patchogue, L. I. Messrs. Anderson, Churchill and Co., who are large owners of the company, are the selling agents. The capital stock is \$200,000, of which \$150,000 have been paid up. They have ten looms in running order, and expect, when the plant is complete, to have fourteen.

Under the style of the Bromley Manufacturing Company the members of the firm of John Bromley and Sons have twelve looms, which are all new machinery. Wight and Lackey are their selling agents.

The Horner Carpet Company broke ground for a factory in the fall of 1891, and early in the following spring were in running order. The plant will include twelve looms, of which six are now in operation. The largest part of the production thus far has been confined to the lower grades of goods. It is expected that all the twelve looms will be working about July 1st next. W. C. Longmire is the selling agent.

The Scranton Lace Works, of which Creighton and Burch are the agents, is probably the most complete plant in the country. The buildings were erected after plans drawn by a Nottingham architect, and therefore have every modern facility for the manufacture. The structure is 151 x 255 feet in size, with a court-yard in the centre 40 feet wide. The first curtain came from the loom on April 5th. There are now three looms running, five about ready to start, and in a few weeks fifteen will be in position. In price the goods will range up to \$5. All yarns from 60's to 120's will be imported.

The Wyoming Valley Mills, of Wilkesbarre, Pa., have two looms which have so far been devoted to the production of the higher class of goods.

The Frank Wilkinson Company, who bought the old Old Hartford Company's mill, at Tariffville, Conn.,

have the looms formerly run at Fordham, N. Y., but are importing machinery from their Nottingham plant, and will ultimately have one of the largest factories in the country.

Rowland and Schmidt have put into the old Priestly Mill, Philadelphia, three looms, and expect to have fourteen machines when the works are in complete running order. They have turned out no goods as yet.

The Eastlake Manufacturing Company have three looms running, and are turning out goods up to \$3.50. They have seven looms altogether.

The Nottingham Lace Curtain Company are erecting a brick factory, 300 x 50 feet, three storeys high, at Nottingham, near Galveston, Texas, to cost over \$50,000. The capital stock is \$250,000. The machinery will cost \$150,000, including the duties and freight. R. Behrens is the general manager, and estimates the output of the concern, when in full blast, at \$350,000.

Cleland Campbell and Co., Glasgow, Scotland, are about to start a plant at Columbia, Pa. It is said they will employ 200 operatives.

Bleaching, Dyeing, Printing, etc.

NEW COLOURING MATTERS.

Samples of several new dye-stuffs have recently been sent to us by different colour manufacturers, of which a description will be of interest to the readers of *The Textile Mercury*.

Messrs. L. Cassella and Co., of Frankfort, have issued several more dye-stuffs of their well-known Diamine Series of direct-dyeing colouring matters. We have three new blues, viz.:—

DIAMINE BLUE B X, 2 B, AND 3 B.

The former is similar to the older brand B in the shade of colour it gives, but it possesses the advantage of being faster to light and soaping. The 2 B and 3 B dye very bright blues, the 3 B being probably the purest direct-dyeing blue now available for use by dyers. These new dye-stuffs will dye cotton in a bath of Glauber's salt or common salt and soda. Wool can be dyed in a weakly acid bath containing Glauber's salt, or the colours can be dyed on chrome-mordanted wool yielding fast shades. Silk goods are dyed as cotton; mixed silk and cotton goods are dyed similarly. The shades obtained from the B B blue are darkened by acids and reddened by alkalis, and are not fast to soaping. Those obtained from the 3 B blue are reddened by acids and darkened by alkalis, and bleed on soaping. The B X blue shades are reddened by acids and alkalis, and are not fast to soaping.

DIAMINE GREEN B.

We have now for the first time the opportunity of dyeing unmordanted cotton a green from a single direct-dyeing colouring matter. Hitherto greens have had to be dyed by mixing a blue and yellow dye-stuff together, and some good greens can be obtained by this method. Diamine Green B is dyed on cotton, wool, or silk, from a bath containing Glauber's salt. With small quantities of dye-stuff it gives what are generally known as "sea greens;" with larger quantities dark greens of a bluish tone are obtained. The dyeings are bright in tone and level, and the dye goes on the fibre easily. The shades are turned slatey-blue by strong acids and blue by alkalis, and are not fast to strong soaping. On wool they are faster than on cotton. For mixed fabrics, either of wool and cotton, wool and silk, or silk and cotton, the green is very suitable and useful, as it goes on evenly and gives about the same depth of colour on all fibres. For dyeing compound shades Diamine Green B will be found very useful: thus, with Diamine Black R O, a very fine fast jet black can be obtained; with Diamine gold or Diamine yellow, a fine leaf green can be dyed; and a good brown by mixing cotton brown with the Diamine green B. In calico-printing Diamine green B can be used to print white designs on a green ground; after dyeing in the usual way a discharge containing acetate of tin and tin crystals is printed on, and the material is steamed and soaped, when a good white is obtained where the discharge has been printed.

The next dye-stuffs we have to describe are the productions of the Clayton Aniline Co., of Clayton, near Manchester, who have lately placed on the market two patented dye-stuffs under the name of

COTTON BROWN R AND Y.

To call these browns is rather a mistake, as they dye a brownish-red, such as is generally known as a terra-cotta red. There is not much difference in the shades or tones of colours dyed by the two dye-stuffs: they are bright and solid. Unmordanted cotton dyed from a bath containing the dye-stuff, common salt, and soap. As the dye-bath is by no means exhausted, it may be retained and used for subsequent lots of material, only about two-fifths of the original quantities of dye-stuff, etc., being required. On wool and silk these new browns dye from a neutral bath, the shades being a little deeper than on cotton. Acids and alkalis have no action on the dyed colours: they resist soaping, and in this respect the new browns are superior to other direct browns dyeing similar shades. The colour is, however, not fast to light. The browns may be used in calico-printing by printing a colour made with starch, phosphate of soda, and the dye-stuff, and steaming and soaping. The new cotton browns may be used in conjunction with all other direct-dyeing cotton colours to obtain a variety of useful shades. Owing to the fastness of the shades obtained from these new products against acids, alkalis, and soaping, there is no doubt they will be received with favour by dyers, and they are well worth attention.

The next dye-stuff is sent out by the Actien-gesellschaft für Anilin Fabrikation of Berlin, under the name of

NYANZA BLACK B.

This dye-stuff belongs to the group of amidazo dye-stuffs dyeing cotton without a mordant. It is capable also of dyeing wool and silk. On cotton it is dyed with the acid of Glauber's salt in a boiling bath. With from 1 to 2% light blue shades are obtained; and with 4 or 5% dark blues; blacks are not obtainable with the dye-stuff alone, but the addition of a direct yellow or green will give a passable black. Being an amido colour, the dye-stuff fixed on the fibre is capable of being diazotised and developed into a new colour: in this way, by dyeing with 5% of Nyanza black B, passing through an acid bath of sodium nitrite, and then into a solution of phenylene diamine, a full black of a blue tone is developed. If beta-naphthol be used as a developer, a blue-black is obtained. On cotton dyed with Nyanza black B, dilute acids have no action; strong acids turn the colour rather bluer; while caustic soda turns it scarlet. The dyeings are fast to soaping. For wool and silk Nyanza black B has more affinity than for cotton. It can be dyed on these fibres in a bath of Glauber's salt, and 5% of the dye-stuff gives a good black; with smaller quantities blues are obtainable. The dyeings are fast to soaping and to dilute acids, but are turned redder by acids.

The Farbenfabriken vorm. F. Bayer and Co. have added three new dye-stuffs to their list of substantive cotton dyes—one yellow and two reds.

CHLORAMINE YELLOW

Dyes cotton from a salt bath fine bright shades of yellow, from a yellow to a full orange yellow. The dyeings are just turned a shade lighter by strong acids, and are not affected by caustic soda—a feature of some advantage over Chrysamine and some other direct yellows which are turned red by alkalis—and soaping has no action. Chloramine yellow is one of the most soluble of the direct yellows, and therefore may be used for padding light chamois and straw grounds in calico printing, in which case a weak solution, to which a little sodium phosphate is added, is used. On wool and silk, Chloramine yellow may be dyed in a bath of sodium sulphate and a little acetic acid; on wool fine bright yellows are obtained; on silk rather darker shades are developed. The dyeings are as fast on wool and silk to acids, alkalis, and soaping, as on cotton. For dyeing half-woolen goods the new yellow will be available.

The two new reds referred to are named GERANINE B B AND GERANINE G.

These dye cotton from a salt bath a fine pink to deep red. The pink shades with 10 to 15% of the dye-stuff are very bright, the G giving yellowish tones and the B B bluish tones of pinks. With 1/2 to 2% scarlets with the G, to ruby-red with the B B brands, are obtainable. The dyeings from Geranine G are turned a shade browner by strong acids, and blue by alkalis, and are not fast to soaping. Those obtained from Geranine B B are similarly affected by acids and alkalis, but are decidedly faster to soaping, which causes them to bleed but little. On wool and silk the new reds may be dyed in a bath of Glauber's salt and acetic acid, giving deeper and brighter shades than on cotton, the dyeings being affected by acids, alkalis, and soaping in the same manner as those dyed on cotton. In calico-printing the new Geranines may be used for padding light pink grounds, a solution containing a little phosphate of soda being used. Altogether the new Geranines are a decided acquisition to the range of direct dyes, and should meet with a favourable reception from dyers.

Letters from our Readers.

ASHWORTH versus LAW.

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

SIR,—It would appear from the reply of the defendants to mine of the 27th ult. that the only consolation now afforded them is to be found in the answer of plaintiff given to counsel's question 143, and which, strange to say, the defendants' counsel, the Solicitor-General, dismissed at once, "as not being a question for the plaintiff at all." Evidently the Solicitor-General found no comfort in either the question or answer, though his clients now see in both more than he did, and indeed all they require is to establish a position I have previously shewn to be untenable. Still, so far so good. It clears the matter considerably to know on what portion of the evidence reliance is placed in proof, or explanatory of the statement contained in their previous letter, *i.e.*, "By our machinery we do and always have ground down the sides of card teeth to any depth required." Now, either the defendants can, or they can not, side-grind to any depth required. If the former, surely the evidence ought to leave no room for any ambiguity on the point; and if the latter, then either the evidence, or the judgment, or both together, should be equally clear that no such claim has ever existed. With regard to question 143, it is quite possible that the plaintiff had in his mind a totally different idea from that which is ascribed to him by the defendants, and which the evidence leading up to and following this point will best explain. Let us see if that is so. By Mr. Aston to plaintiff (referring to defendants' machine):—

Q. 114: "Are you able to tell his Honour whether there was an effective cutting away of the sides of the teeth such as you describe and claim in your specification?"—A.: "Undoubtedly there was. That was the object of using the discs and putting the disc one-eighth of an inch, as it were, between the rows and space."

Q. 115: "Will you say that again?"—A.: "I say that was the object of their using the disc and pressing it to a distance of one-eighth of an inch between the space and the wires."

Q. 116: "Was it pressed an eighth of an inch between the space and the wires?"—A.: "Yes, I know that, because we took up a part of one of the discs and found it to be so marked."

Q. 117: The Judge.—"That was the object of what, do you say?"—A.: "The object of using the disc and pressing it to a distance of one-eighth of an inch between the rows of wires, that is, the cutting away the sides of the teeth."

Q. 126: "Just look at that, will you?" (A broken disc was handed to plaintiff).—A.: "Yes, I see it, sir."

Q. 127: "Is that like anything you have been speaking of?"—A.: "Yes, I think that is the disc I saw at defendants' works."

Q. 128: "At all events, it is like it?"—A.: "Yes, it is like it exactly."

Q. 129: "Now, shew that to his Honour, and tell his Honour why it is that you say that shews a penetration?"—A.: "Well, sir, it is marked about an eighth of an inch down the sides where it has been operating between the teeth. It shews that it has been operating to that depth."

The Solicitor-General: "I do not think it is necessary to put this in at all. There is no doubt about the penetration, as far as that goes."

Your readers will now see that the penetration, or side-grinding, and the extent of it, is hereby conclusively established and admitted by defendants' counsel to be one-eighth of an inch—neither more nor less. This, therefore, is not side-grinding "to any depth required," but side-grinding "to some extent," as so described by the terms of the judgment, or to the limited extent of one-eighth of an inch. The claim of the defendants, therefore, to side-grind "to any depth required" is thus far seen to be completely outside both the evidence and the judgment, which latter is most important of all, and cannot be questioned. But I now come to that portion of the evidence on which they rely.

Q. 143: "Now, are you able to say whether the defendants do sharpen card teeth substantially as set forth in your specification?"—A.: "I consider that that is what they do exactly."

The Solicitor-General: "Well, I submit that is not a question for the witness at all."

Here it will be seen from the foregoing evidence that the interpretation of the terms "substantially" and "exactly" have special reference to the extent to which there is any sharpening at all, and which has already been proved to be limited to one-eighth of an inch. But the reference is not complete unless the subsequent connection be shewn:

Q. 144: Mr. Aston.—"Now, I will take you through them *seriatim*. Do they sharpen teeth by means of revolving grinding discs of consolidated emery?"—A.: "They do."

Q. 145: "Do these revolving grinding discs of consolidated emery traverse the spaces between the rows of teeth?"—A.: "They do."

Q. 146: "Are the grinders or the cards traversed in that case, and if so, which?"—A.: "The grinder is traversed."

Q. 147: "And if the grinders are traversed to the extent that there is any sharpening, is that sharpening like Ashworth's?"—A.: "I think so. Yes, it is."

This, then, is the whole case. Side-grinding to the same extent as Ashworth's is only possible by the Ashworth patent by means of a plough, and not by the traversing side-grinder, which passes over the tops of the wires to the depth of penetration shewn. Were it practicable otherwise, the trade generally would not have accepted by licence the former method, as against the latter, for so many years, and still continue to do so by preference, notwithstanding the result of the action.

With the other side questions of your correspondents I am not concerned, and am willing now to leave the whole bearings of the case to the judgment of your readers.—Yours, etc., CHAS. J. HALL, Manchester, May 11th, 1892.

A CLOTH storey at Toronto, on the Neva, four storeys high, collapsed recently, and four lives were lost.

ANOTHER NEW FIBRE.—A large tree is found in Mexico, but more especially in the State of Tabasco, known as the jocolin (*Clusia peruviana*) majagua, or pea-tree. It grows with such rapidity that it is really dangerous to fields lying waste. Hitherto, the fibre obtained from the bark of this tree has been used for merely making cordage, its power of resistance being equal to that of hemp. In all probability, "jocolin" will soon be included in the raw materials used for making paper, and, thanks to its polish and fineness, it may some day play an important part in the manufacture of tissues. The cultivation is exceedingly simple, consisting merely of two or three weedings per annum. At the end of two years the tree is ripe for the market; it is cut down, the bark taken off, and steeped in water. After soaking for eight days, a simple washing suffices to lay bare all the fibres.

A SILK EXHIBITION.—The London correspondent of the *Manchester Guardian* writes:—"Yesterday (Saturday) there was a private view at the 'Esthetic Gallery,' New Bond-street, of a collection of silks which should be deeply interesting to those concerned in the trade of Macclesfield and Leek. It is the third annual show, and Mr. Goodyer, the proprietor of the gallery, has taken a commendable part in reviving the English silk industry, and in proving that by taking pains we can hold our own against all foreign competition. Particularly effective and beautiful are the embroideries from Mr. and Mrs. Wardle's school at Leek, with a fringe of Macclesfield silk. Very many cushions of this kind were shewn, and all the Leek embroideries were charming as to design and colour harmonies. It would seem that silks are now being used more for decorative purposes than for dress. For instance, it is, I understand, no uncommon thing when a room has to be furnished as perfectly as possible for the exact hue of the silk curtains and hangings, so as to suit the furniture and surroundings, to be settled by an artist. The order is then sent to Macclesfield to be executed. A beautiful decorative effect is also given by antique Cretan embroideries with fringes of Macclesfield silk. This Cretan work is in hand-made linen, and the dyes are vegetable. The fabric lasts almost 'for ever,' and the colours are scarcely more than mellowed by

time. In the exhibition are also some lovely broads of ancient French design from Spitalfields, and some brocatelles from Baintree. A curious exhibit is a fragment of silk lately found by Mr. Flinders Petrie in a Christian Coptic tomb of the sixth century. The design has been reproduced, and is simple and effective. There is also shewn some Clutha glass from Scotland, of a green shade, which cannot be described in words, but obviously lends itself to floral decoration. With letter modelling as to shape this peculiar industry ought to flourish."

Designing.

NEW DESIGNS.

MATTING CLOTH.

A matting cloth in plain weave, two in a head and two in a shed, as follows: 20's cotton warp and weft, 64 ends, and 64 picks per inch, 30 inches out of loom in width; good beetle finish; best cotton materials; fast colours suitable for the washing process.

Pattern: 6 chocolate, 2 light fawn, 2 white, 2 light fawn, 4 white, 6 light green, 4 white, 2 light fawn, 2 white, 2 light fawn, 4 white, 6 bright red, 4 white, 2 azure, 2 white, 2 azure, 4 white, 2 azure, 2 white, 2 azure, 4 white, 2 azure, 2 white, 2 azure, 4 white, 2 faint pink, 2 light green, 2 faint pink, 4 white, and repeat from the 6 chocolate. The weft checking may be the same pattern, or, to save so many shuttles, may be worked with white and fawn all through.

FIGURED MANTLING.

As the characteristics appertaining to the various weaves used in worsted goods become better known, and more under control, we may expect a very decided development of the figured mantle trade. Already a few of the better known effects have been utilised in the production of weave figures of considerable merit. In *Figure 1* and *Design 1* is demonstrated a system of development from which much may be gained. In the first place note should be made of the fact that simply warp and weft weaves and a simple twill are the only effects used; but it need hardly be stated that there is something more about the combination than appears at first sight. Why not have used 3-and-3 or 4-and-4 twill, or the pure warp and weft sateens?

Now the designer of experience knows that the 8-end diagonal yields a very characteristic effect when rightly treated; he also knows that to add a dot to the pure sateen, either at the top or side, may mean more than is apparent at first sight. These are the means of development, which have yet to be used in their best form, and our readers will do well to thoroughly acquaint themselves with the principles here briefly indicated.

Respecting the figure, we need only say that it is of the figured mantling type and is here given rather as indicating weave development than as a specimen floral design. The warp, etc., given below will yield a pleasing effect:—

Warp.—All 2-48's worsted; 12's reed 6's.
Weft.—All 36's mohair or 24's worsted; 72 picks per inch.

COTTON FABRICS.

The designer's and manufacturer's skill is directed in every possible way to combine weaves, colours, and materials that will produce goods to captivate the taste of the public and command a ready sale, particularly in the home market. There seems to be a growing desire for cotton fabrics, especially in dress materials, the reason adduced for this change of fancy being the fact that they are less costly, quite as durable, and more cleanly, while the colours always appear brighter; and when made of good materials and sound fast colours, they can be washed, and come out of the laundry always looking fresh. In point of economy many more changes can be obtained at a less price than in more costly goods. Many in the higher classes of society are setting an example in this way—at all events, so far as the summer and early autumn seasons permit. If the fashionable intelligence is to be a guide, quite an ideal material is found in cotton for tennis blouses and cycling costumes. Cotton fabrics

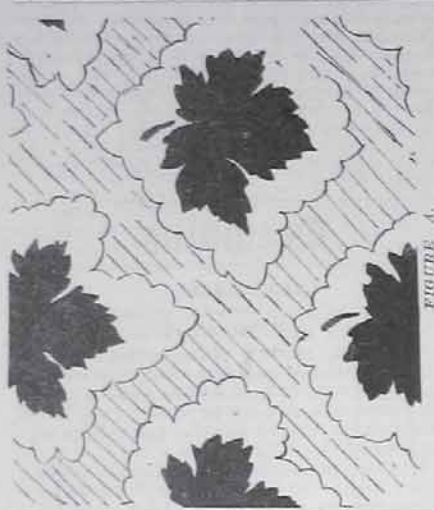


FIGURE A.

in new shades for covering settees and cushions are likewise becoming highly popular, and are fast displacing expensive embroidery; there is a wave of economy, and King Cotton is once more in the ascendant. In shirtings some very neat and effective patterns are being prepared, all-cotton, for summer wear. We will give a few of these really handsome stripes and checks as early as possible. We now submit a design, *A*, for a cotton blouse or dress material; it is merely indicative of style, and may be constructed to suit requirements. We have reduced it to the lowest working point, as may be seen by the two pegging plans. The object held in view relative to this design is to give a ground and small figure of a matting cloth—that is, with a certain amount of porosity, which seems very desirable for all summer fabrics, especially when worn during active exercise. It may be made on 8 shafts, straight-over draft, either with the first pegging plan, 48 to the round; or with the second pegging plan, 24 to the round; in the latter case the weft would have to be

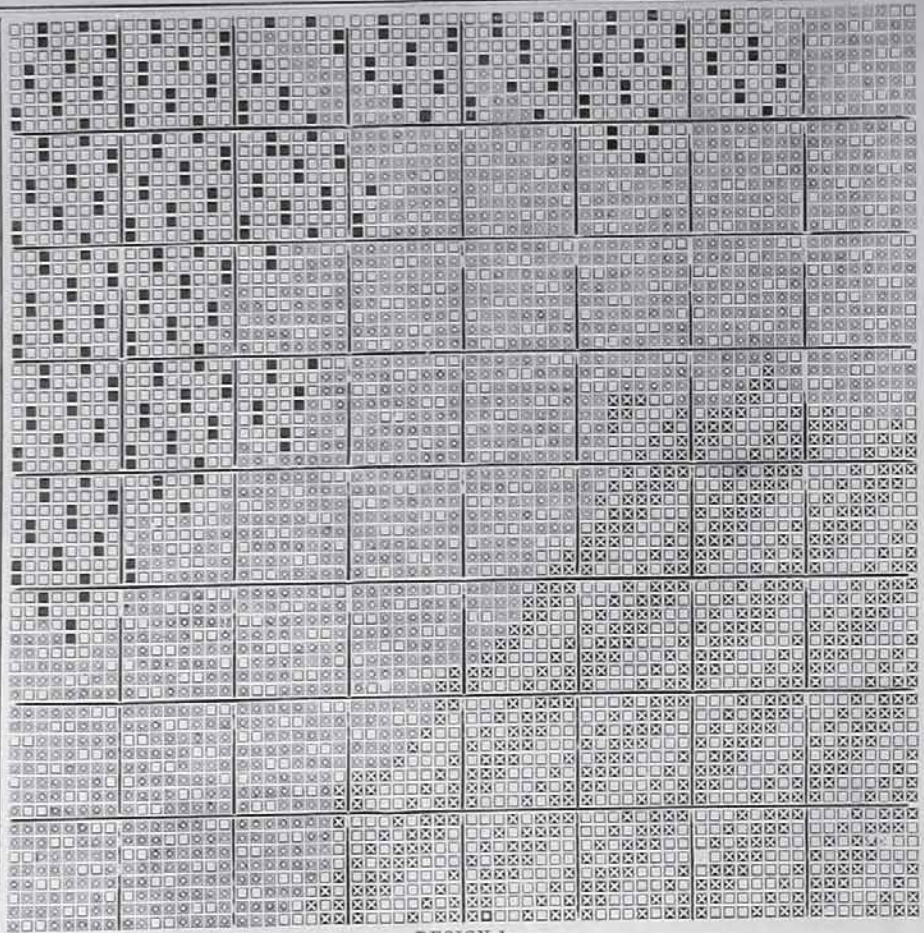


A: 3rd PEGGING PLAN.

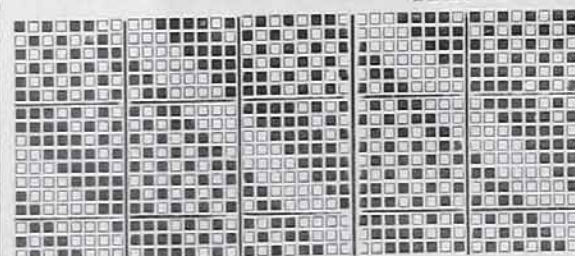
wound double on the bobbin for the shuttle; the warp to be drawn in two in a heald, all dark colours; the weft grey cop, cream, or very light tints of the ground shade; violent contrasts are out of date, and not permissible except for export goods.

GINGHAM DIAGONAL.

Design B is a diagonal for a fancy dress gingham in cotton; warp 40's, in 40 dents per inch; weft 40's, with 80 picks per inch. It is on 17 shafts, straight-over draft, 17 to the round. The great peculiarity in this running diagonal stripe is that any pattern in the warp cannot be continuous, but will be broken up, and take a new direction on account of the odd number of shafts. For instance, 6 coral, 6 white, would have an extent of 204 warp ends before the measure of 17 would be met; and with a pattern of 8 and 8, two warp colours, 272 ends would only meet the measure. This will clearly indicate the almost unlimited scope of varieties that may easily be obtained by colour arrangements in the warp, without taking into consideration the innumerable changes obtainable by weft checking. As an example with three colours, say simply 6 red, 6 blue, 6 white, in this warp pattern, 306 ends would be the repeat; and if the weft pattern crossed these with three shuttles, a novel mélange of 306 weft picks in a mingling of shade would be produced with 6 fawn, 6 dark green, 6 cream. It will thus be seen without further examples, and with a change of the pegging plan to some other broken twill within the compass of the 17 shafts, that the variations are scarcely within the bounds of calculation. A fabric of this peculiar disposition is capable of producing patterns that should command a market as dress goods.

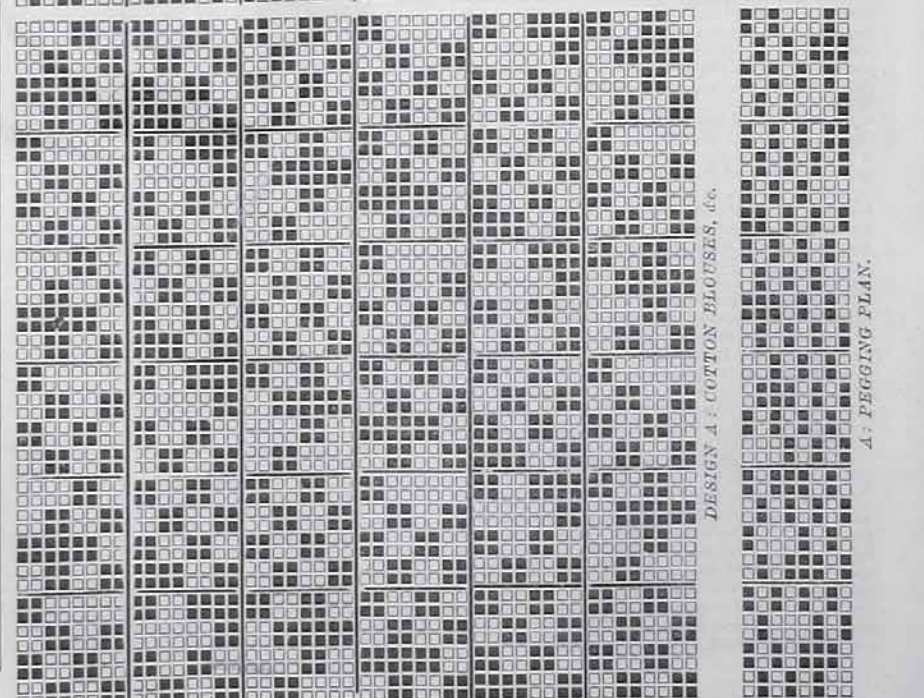


DESIGN 1.



DESIGN B.

B: PEGGING PLAN.



DESIGN A: COTTON BLOUSES, &c.

A: PEGGING PLAN.

Machinery and Appliances.

A NEW VISCOMETER.

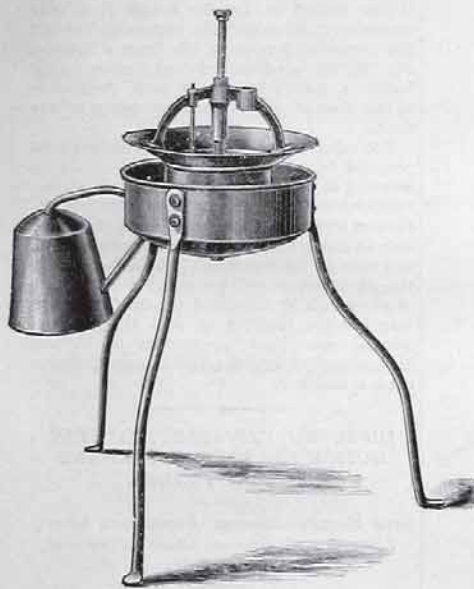
MAKER: G. H. HURST, 22, BLACKFRIARS STREET, MANCHESTER.

The property of viscosity which an oil possesses has an important bearing on its lubricating power: the more viscosity, the better, as a rule, will be its powers of lubrication. This has long been recognised in a crude and imperfect manner by both oil dealers and users, the former of whom are fond of diluting upon the "body," as they term it, of their special line of oils; and most managers of spinning mills have had much said to them by would-be oil sellers on this point. Notwithstanding all this, however, few oil dealers or oil users have much idea of the true bearing of viscosity on the lubricating power of an oil. This arises from

has a very ingenious and yet simple mode of heating—for it has been designed to test the viscosity at any temperatures from 60° F. to 200° F. The oil is placed in an inner vessel, which is filled up to a certain mark or gauge; and this vessel is surrounded by a water jacket. A thermometer in the oil and one in the water serve to record and regulate the temperature at which the viscosity is being determined. The operation is a simple one: thus, when the required temperature of the oil is reached, a graduated flask is placed under the apparatus, the valve is lifted, and the oil allowed to flow out; and the time it takes for 50 c.c. to run out is taken as a measure of the viscosity of the oil. The less the viscosity is affected by increase in temperature, the better is the oil for any purpose of lubrication.

This viscometer has several advantages over the old glass apparatus: it requires less oil; the temperature of testing is known with certainty, which is not the case with some other forms; it is durable, easy to manipulate, efficient

textile industries, because of the important revolution wrought in the art of weaving. Perhaps the most surprising thing about it, however, has been the variety of purposes to which either the machine itself, or modifications of it, have been applied. It would occupy too much of our time to enumerate these, let alone to describe them at any length, though, perhaps, the result would be neither uninteresting nor without instruction. It would certainly be suggestive to an ingenious and intelligent reader with mechanical tastes. But there is another side on which this machine has also been singularly fruitful, and that is in calling forth the invention of other machines, the chief functions of which are to aid in preparing the sets of card patterns. Thus there are card cutting machines reading-in and stamping machines, card repeating machines, and card lacing machines, and the list is not exhausted even here. It is an improvement of one of these, the piano reading-in and stamping machine that we are called upon to notice. Not all the



HURST'S VISCOMETER.

two causes—firstly, from want of a good instrument for determining the viscosity of a sample of oil, not only at the ordinary temperature, but at higher temperatures, to see how the difference affects the oil; and secondly, from the lack of an acquaintance with the practical working of particular oils whose viscosity has been measured. This latter point can only be ascertained by the user, or rather by a co-operation of the user and the dealer; but there is little mutual desire for such co-operation, although it might lead to some useful results.

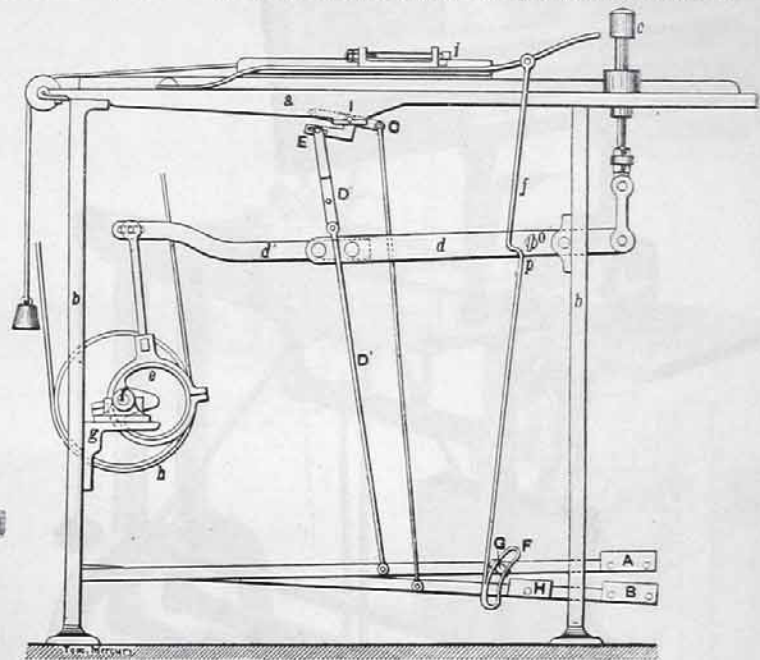
The want of a good apparatus for testing the viscosity of oils has been met by the introduction of Hurst's viscometer, illustrated herewith. This instrument has been designed by Mr. G. H. Hurst, F.C.S., the lecturer on the Technology of Lubricating Oils at the Municipal Technical School, Manchester, and is the outcome of much practical experience in the testing of lubricating oils. The apparatus is constructed entirely of metal, and it is at once apparent that it must possess advantages on the score of durability which the old-fashioned glass apparatus cannot offer. The instrument

in working, and is reasonable in price. Although the instrument is not intended to be regarded as a standard one, yet its readings are so concordant when used by a careful worker, that it might with safety be quoted as a standard in contracts for the sale or delivery of lubricating oils. If managers of cotton mills would take to testing their oils by such an instrument as this, and observe the practical working of all oils so tested, they would obtain some information that ought to be of great service to them, and would understand better the conditions an oil must comply with to make it a first-class spindle, loom, or engine oil.

IMPROVEMENT IN THE JACQUARD PIANO CARD READING-IN AND STAMPING MACHINE.

SOLE MAKERS: MESSRS. DEVOGE AND CO., MANCHESTER.

Jean Louis Jacquard's invention of an attachment to the loom for simplifying the production of figured fabrics in weaving is one of the most remarkable ever brought to fruition in the



600'S PIANO READING-IN AND STAMPING MACHINE.—FIG. 1.

readers of *The Textile Mercury* will be familiar with the appearance of this machine, and therefore we have thought fit to include in our notice a beautiful illustration of the same, as made by Messrs. Devoge and Co., of Manchester. A brief description will soon make its salient points comprehensible by the reader.

The illustration given on next page is that of what is technically called a 600's piano reading-in and stamping machine. It will also cut 100's, 200's, 300's, 400's, 500's, and 600's cards, and can be arranged to cut any special size. The operator having mounted the design, which is upon "point" paper, on the stand as shewn, seats himself at the machine in front of the table shewn on the left hand. The blank card is inserted endways between the guide frame on the table and passed forward under "the punch block," the block having the horizontal pins projecting from its side. The forward end is then taken hold of by the gripper on the top of the machine behind the pattern frame. This has a card attached to it carrying the weight shewn, by means of which the card is drawn forward under the block a regulated distance every time a row of holes has been punched

therein. The machine, as shewn, is operated by pedal power, that being the feet of the worker, by means of the treadles shewn. Whilst thus treading the machine, the operator has to "read" off the pattern before him, and by means of the finger keys, the projecting pins referred to before, has to put in or out of action the vertical punches seen under the block just beneath the keys. The punches left in action perforate the card with holes corresponding to the 'points' upon the design. By this method, which is the chief one in vogue, to cut

the perforating cross-bar linked to the lifting lever *d*. This lifting lever *d* as applied to existing machines is extended backwards by the lengthening piece *d*₁, and connected at its extremity to an eccentric *e* mounted upon a driving shaft *f* working in bearings in the brackets *g* affixed upon the inner faces of the end *b* as shewn. The shaft *f* also carries one or more speed pulleys *h* for receiving motion from a line shaft or other convenient motor. In this manner the inventors obtained the desired vertical reciprocating motion for the perforating cross-bar or

oscillates (whilst the treadle is so depressed) it communicates motion to the rod *j* and this in turn operates the rack-catch *i* carrying the card a space forward from the front. When the treadle is released the rod *j* is drawn back by the extension spring *k* and in this position the stud or arm *o* has no effect upon such rod *j* which consequently remains stationary.

The inventors have several alternative ways of accomplishing their purpose, but we confine our attention to the one just described, which they have adopted as the most approved. In Fig. 2 it is shewn as applied to existing machines. The treadles *A* and *B* are retained, and the adjustable link *p* is employed for connecting the rod *p*² to a slotted bracket at the rear end of the treadle. The treadle *B* carries a counter weight *n*, which gives a constant tendency to the treadle *A* to rise immediately the foot of the operator is removed. By this means the rod *j* is forced back to its normal position with its projection *p* out of contact with the stud *o*.

The machine can thus be worked either by manual power, or any other motive power. When desired to use the former it is only necessary to disconnect the adjustable link and the extension portion of the lever *d* marked *d*₁. By this arrangement card cutters, manufacturers, and others, may avail themselves of the class of power most convenient at any time.

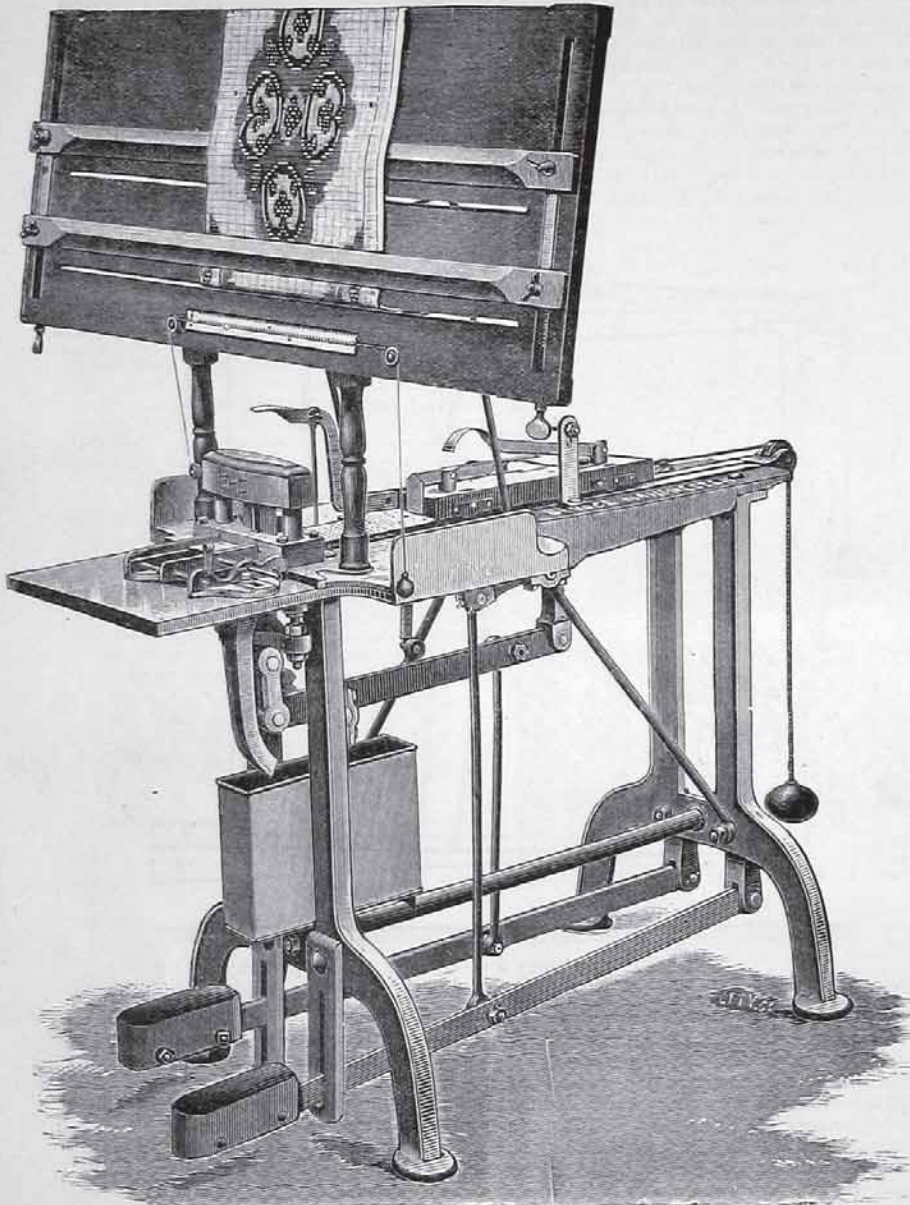
The relief thus obtained for the workers from physical labour must have much to do in securing an increase of production, as it will certainly enable them to devote closer and more continuous attention to their work when they have only to manipulate the keys in the punch block and read off their pattern. We feel confident the improvement will command the attention of all pecuniarily interested persons, and these may see the machine at work alongside the manual ones upon application to Messrs. Devoe and Co., at their establishment, Oldham-road, Manchester.

IMPROVED VARIABLE TRAVERSE MOTION FOR PREPARATION AND SPINNING FRAMES.

SOLE MAKERS: MESSRS. BROOKS AND DONEY
LATE SAMUEL BROOKS, UNION IRONWORKS,
MANCHESTER.

(Messrs. Cook and Harrison's Patent.)

One of the heaviest items of expense in a cotton spinning mill is the wear and tear of roller leather. Proprietors always look at this item with a longing hope and desire that the progress of invention may soon relieve them from it, but so far the anticipation has not been fulfilled. All substitutes hitherto tried have failed to answer, and have only proved once more the truth of the old adage, that in this instance at least "there is nothing like leather." Such being the case, inventors and others have endeavoured as far as possible to devise means that would increase the durability of the leather with which the rollers are covered. In this attempt it was obvious there was a fair chance of success. In times that are now becoming olden, the sliver, slub, or rove, was sent through the rollers always at one point, the effect being that the covers were soon worn away or so far channelled as to be rendered useless. The leather on each side of the channel thus made remained perfectly good, and this suggested the introduction of a means of traversing the delivery of the material to and over the full surfaces of the roller bosses by which the whole cover could thus be utilised. This was done with advantage, but it was found that the invariability of the movement resulted in the



600's PIANO READING-IN AND CARD STAMPING MACHINE: MESSRS. DEVOE & CO., MANCHESTER.

an ordinary 400 card requires each treadle to move up and down 56 times, which, it will be obvious, must entail a considerable expenditure of muscular energy. To obviate this by enabling the machine to be worked by power is the object of the improvement effected, and the method by which it has been accomplished is the joint invention of Mr. Richard Sadler, cardenter; Mr. John Russell Beard, silk manufacturer; and Mr. John Godwin, designer, all of Macclesfield.

In Fig. 1, *a* represents the table supported upon the cast iron end frame *b*, and carrying

punch block.

In order to operate the rack-catch *i* they depend from the same a rod *j* the lower extremity of which is connected at the rear to an extension spring *k* which serves to constantly pull the rod backwards. At front this same rod *j* is connected to a front lever or treadle by means of a cord or chain passing over a guide pulley, and so by depressing the treadle the rod is drawn forwards to allow a stud or arm *o* projecting from the side of the lifting lever *d* to come in contact with a projection *p* upon the depending rod *j* and thus every time the lifting lever *d*

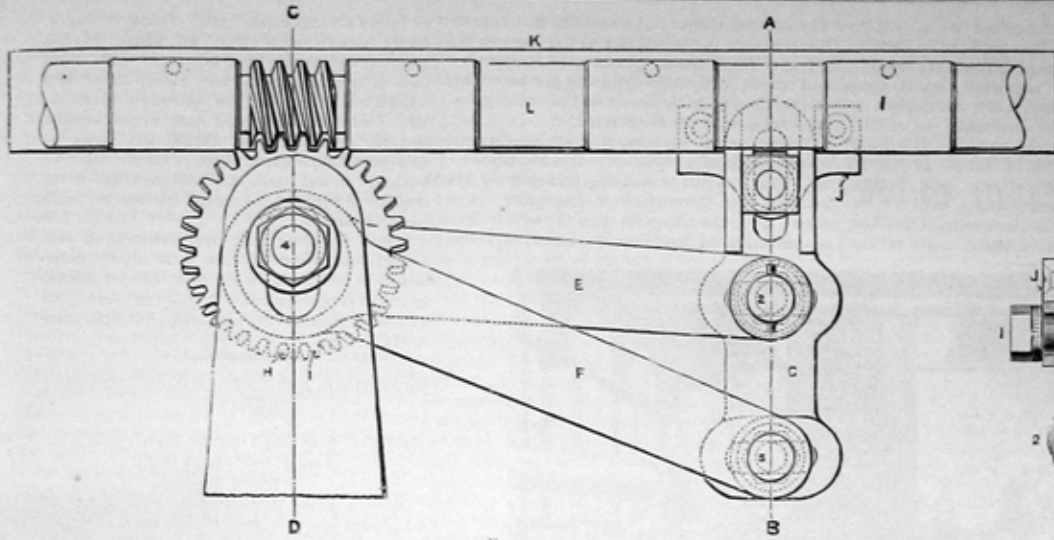


FIG. 1.

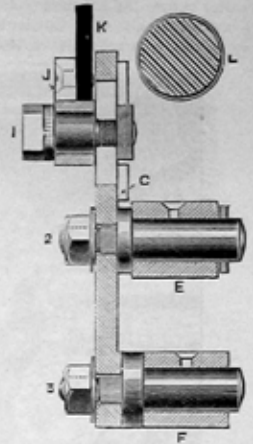


FIG. 3.

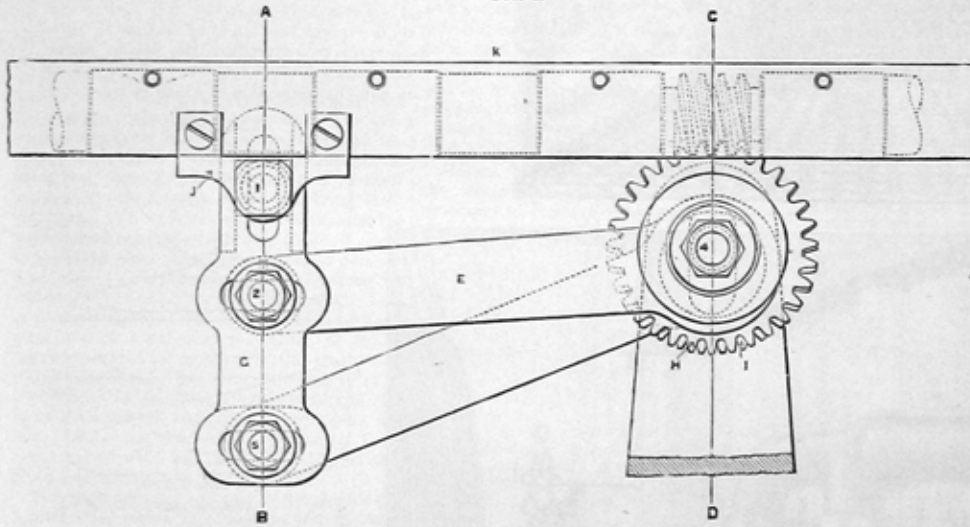


FIG. 2.

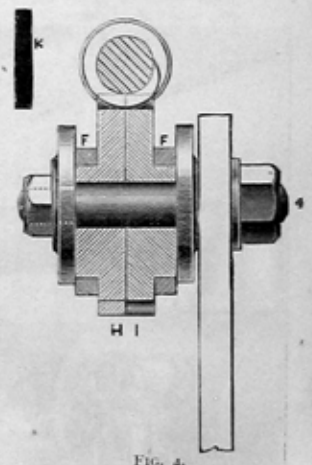


FIG. 4.



FIG. 5.

PATENT VARIABLE TRAVERSE MOTION.—MESSRS. BROOKS AND DOXEY, MANCHESTER.

production of other defects. From this sprang attempts to introduce a variability in the traverse that should obviate these, and it is at this stage the course of improvement has arrived.

We have much pleasure in bringing before the notice of our readers an invention for this purpose, just perfected by Messrs. Cook and Harrison, who are and have long been connected with the firm of Messrs. Brooks and Doxey, in capacities that have given them the best opportunities of appreciating the necessity for improvement and the greatest facilities for accomplishing it. The arrangement, which is fully illustrated in the accompanying five figures, which shew the front, back, and two sections, and also a fac-simile of full-sized diagram produced by the motion, is a variable traverse motion. The same letters and figures apply in each case, and the end-sought is attained in the following manner:—Mounted upon a

stud 4 fixed to the bracket on roller beam are two wheels H and I, varying in their number of teeth either by one or any other desirable number. On each of these wheels is fixed an eccentric, and on each of these eccentrics works a rod or link E and F; these two rods or links are connected to a common bracket G, one link being secured to the bracket at the bottom, and the other link at any convenient distance from the bottom. The points of attachment are shewn at 2 and 3. The opposite end of the bracket G is attached to the ordinary traverse rod by means of the adjustable stud 1, the stud passing through a hole in the traverse rod and through a bracket J fixed to the traverse rod. The stud 1 can be moved up or down the vertical slot, so as to give a longer or shorter extreme traverse. The wheels H and I are driven by a worm cut in the roller or fixed to any convenient part of the machine. As this worm drives both the wheels H and I, and one

wheel has more teeth than the other, one eccentric is continually varying its position in relation to the other: so that at one time the eccentrics will be moving both the links E and F, and with them the bracket G in the same direction; and at another time one eccentric will be throwing its link in one direction, and the other eccentric its link in the opposite direction, thus giving a constantly varying length of traverse, as shewn in Fig. 5. Supposing the motion were made so as to give an extreme traverse of 1 in., the least traverse would be $\frac{1}{2}$ in., and assuming the two wheels to have 30 and 31 teeth respectively, the bottom back fluted roller would require to make 900 revolutions before the traverse changes from $\frac{1}{2}$ in. to 1 in. and back again to $\frac{1}{2}$ in., which is shewn as follows:—When the back bottom roller has made 15 revolutions the 30 teeth wheel has gone half round and completed the traverse in one direction, and consequently

when this wheel has completed its circumference and the roller has thus made 30 revolutions the backward and forward traverse is complete. As the 30 teeth wheel necessarily gains upon the 31 teeth, one tooth each revolution, it follows that the former must make 30 revolutions before both wheels come to the same relative position, so that it takes, as named above, 900 revolutions of the back bottom roller before the traverse changes from $\frac{1}{2}$ in. to $\frac{1}{4}$ in. and back to $\frac{1}{2}$ in. Consequently, if the draft be 6, the front roller must make 5,400 revolu-

The method adopted of attaching the apparatus prevents the possibility of the traverse rod lifting. There are no springs used in any way, and consequently the disadvantage inevitably arising ultimately by reason of the same growing weaker with use is obviated.

The following advantages are, therefore, we may say, properly claimed for this invention:—
1st. That it gives a varying traverse to the material upon the surface of the roller, as is shown by the diagram Fig. 5, which is a reproduction of the line traversed, in actual

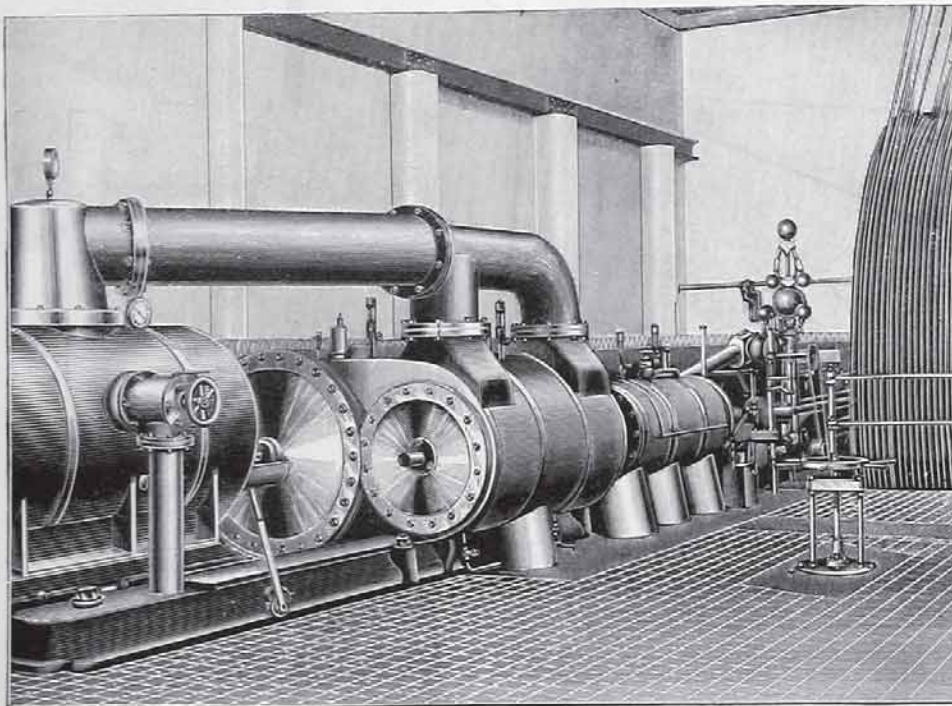
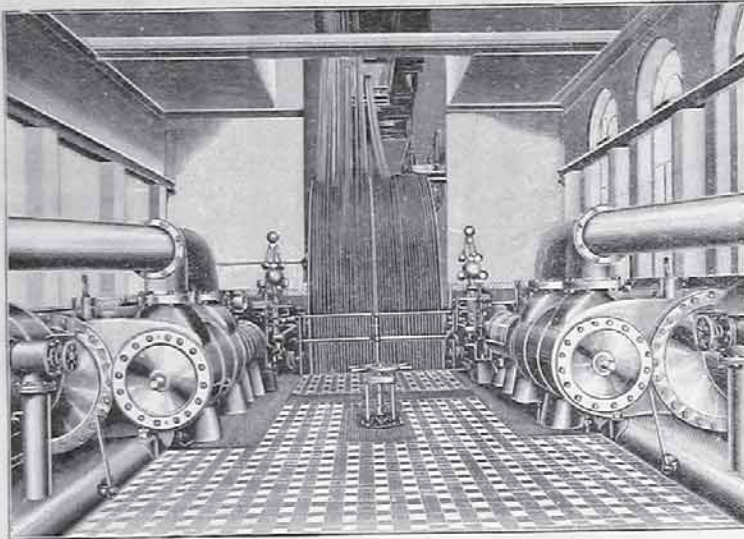
ordinary arrangement. 5th. There is a perfectly steady movement, all lifting of the traverse rod having been obviated. 6th. Fewness of wearing parts, and easier fixing and adjustment than in the ordinary methods. 7th. Great simplicity and ease in its adaptation for obtaining any throw that may be desired within a given range of limit. 8th. No backlash in any part, the construction being such as to produce an equal friction on each bearing surface.

It will be clear from this description that from several points of view it is highly desirable that the trade in its own interest should examine this invention. It may be seen, and any other information obtained, on application to the makers.

IMPROVED PATENT COMPOUND MILL ENGINES.

MAKERS: MESSRS. TIMOTHY BATES AND CO.,
(Late Pollitt and Wiggell),
SOWERBY BRIDGE.

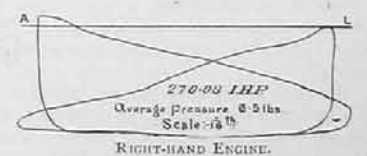
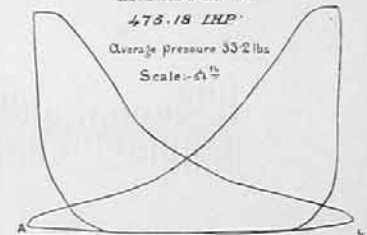
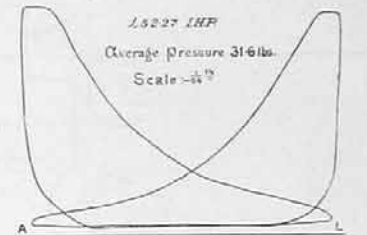
Having regard to the objects with which all men enter business and which they entertain hopes of realizing, namely, a moderate income and a reasonable competency, it is obvious that if these expectations are to be realized in these days of severe competition, the person undertaking such a venture requires to display all the care and circumspection of which he is capable.



VIEWS OF ENGINES.—MESSRS. TIMOTHY BATES AND CO., SOWERBY BRIDGE.

tions before the yarn comes to the same point of the leather again; or, in other words, the yarn instead of coming to a given point every 30 revolutions of the back bottom roller, as with an ordinary traverse motion, does so with this patent motion only every 900 revolutions. In addition to this advantage it will be seen that by reason of the eccentrics varying their relative positions, the links are both on the dead centre, *i.e.*, at rest, only once in every 450 revolutions of the back bottom roller, thus practically ensuring a continuous movement.

work, the motion constantly changing the position of the material before completing the passage across the surface of the boss of the roller. This action ensures (2nd) a considerable saving in leather and other materials arising from the increased durability of the roller covers. This amount, we are informed, is the very considerable figure of 50 per cent. 3rd. An improved quality of yarn, resulting from the more even face of the leather produced by more uniform wear. 4th. There is no dwell at the end of the traverse as in the



DIAGRAMS: TOTAL I.H.P., 1,505.

Especially is this the case in both branches of the cotton trade. And amongst the first essentials of success in the spinning division of this business must be placed a thoroughly well-equipped mill, up to date in its structure, engineering, and machinery. Unless this be the case the chances of failure and bitter disappointment are not inconsiderable. As an element of such equipment, economical and steady driving is perfectly indispensable, and this of course depends upon boilers and engines. A short time ago we gave an illustration and descrip-

tion of what might almost be termed a new departure in boilers, and we may appropriately follow it now with an illustrated description of a fine pair of engines for a modern mill, which were constructed and erected for the Lion Spinning Company, Royton, about eighteen months ago, by Messrs. Timothy Bates and Company (late Pollitt and Wigzell), engineers, Sowerby Bridge, Yorkshire.

As will be seen from the accompanying illustrations, they consist of a large pair of patent horizontal compound condensing engines, which, working up to their full capacity, will indicate 2,000 horse power, thus placing them amongst the largest and finest in the district. Our description will be doubly interesting because the engines furnished by the same makers to the Holly Mill Spinning Company, Royton, are duplicates in every respect, and made, we believe, from the same patterns. The splendid work these are developing will therefore be an assurance and almost a guarantee to the latter company that they have done well in following in the footsteps formerly trod by the directors of the Lion Mill Company. The high-pressure cylinders are 27 in. and the low-pressure ones 46 in. diameter, the stroke of the piston in each case being 5' 6" and the speed of the grooved fly wheel 75 revolutions per minute. The piston speed is 825 ft. per minute. The low-pressure cylinder is placed behind the high-pressure one, this arrangement having been proved by the firm from considerable experience to yield the highest and best results. The low-pressure cylinder has two piston rods, and the high pressure one. These are all composed of steel, and are 4½ in. diameter, and in their movement pass through patent revolving stuffing boxes. These boxes effectually prevent the scoring and uneven wear that is liable to occur in their absence. The slides are 22 in. long by 8 in. wide. The pistons of the high-pressure cylinder are 8 in. deep and those of the low-pressure cylinder 12 in. deep. The cross-head pins are of great strength, being 5½ in. in diameter, whilst the bearing in the connecting rod is 7 in. long. This connecting rod is 12 ft. 6 in. long, 5 in. diameter at cross-head end and 6½ in. diameter at the opposite or crank pin end. The crank pins are 9 in. by 11 in. long, composed of steel, and provided with an improved automatic oiling arrangement.

The high-pressure cylinder is fitted with the firm's patent piston valve and the low one with one of the usual type. The patent one has an automatic cut-off valve working inside. The piston valves are 20 in. diameter in the high pressure cylinder and 26 in. in the low one. The cut-off valve is a piston with a diagonal edge, the obliquity being of the same angle as that of the ports. The automatic action of the governor increases or diminishes the lap according to requirement. The air pumps are 22½ in. diameter, and have the same length of stroke as the engine, and are of a patented construction; the injection pipe is 8 in. diameter. The fly-wheel shaft is composed of the best Whitworth steel, and the necks are 13 in. diameter by 28 in. long, having a swell of 20 in. diameter for the reception of the wheel. From centre to centre the engines are 20 ft. 6 in. apart. The fly-wheel is 22 in. diameter, and has 40 rope grooves of 1½ in. diameter. Its total weight is 56 tons. The speed of the ropes is 5,183 ft. per minute. The steam is supplied to the engine through a 14 in. main pipe, and a 12 in. stop valve, with 9 in. branches to each high-pressure cylinder. The exhaust pipes are 14½ in. diameter. The cylinders are fitted with Lee's patent eight-feed lubricator, two on each valve casing and one on each cylinder. The most recent improvements for ensuring the attainment of uniform speed and the most excellent results have been secured.

A new patent barring engine has also been furnished with the engines. This is the invention of Messrs. Greenwood and Whiteley, two of the foremen in the establishment of the firm. Its action is very simple. A small vertical engine drives the worm-wheel through the worm on the shaft; on the end of the worm-wheel shaft is the pinion, which slides longitudinally on the shaft, and has on its sides projections cast like clutch prongs formed to a quick thread. When the engine is to be moved, the pinion is pushed into gear with the rack on the wheel, and the small engine started. As soon as the speed of the main engine overtakes that of the barring engine, the pinion is disengaged automatically.

The engines commenced to work on May 23, 1890, and have continued at work ever since without the slightest failure of any kind. The accompanying diagrams were taken on the 11th February last. The following particulars were obtained at the same time:—Power, 1,500 h.; total coal consumed per week, 94 tons; total coal consumed per I.H.P. per hour, 24 lb.; total coal consumed per week, engine only, 80 tons; total coal consumed per I.H.P. per hour, engine only, 21 lb. Number of spindles, 107,000 and preparation; total coal consumed per 1,000 spindles and preparation per month, 351 tons; total coal consumed per 1,000 spindles per month, engine only, 29 tons. These figures it will be obvious constitute a very satisfactory exhibit of the working of the engines.

Steam is generated in six steel boilers, which work at 100 lb. pressure.

Messrs. Timothy Bates & Co. supplied all the steam and water pipes, and the fittings necessary to connect them with the engines. They also furnished the shafting and gearing. The line shaft in the spinning room makes 300 revolutions per minute. The mill is 350 feet long, 130 feet wide, and five storeys in height. It contains 107,472 mule spindles and preparations, all we believe supplied by Messrs. Platt Brothers and Co., Limited, Oldham.

BOLTON MACHINERY IN JAPAN.

The Bolton *Daily Chronicle* says:—"Enquiries show that the favourable impression made in the East by Bolton made machinery, and previously referred to in our columns, is still deepening. China, India, Ceylon, and Japan are among the countries where local engineering and cotton-spinning machinery finds its way. As to Japan coarse counts are spun, and we are pleased to learn on the high testimony of our townsman, Mr. James Eastham, who has just returned from that land, that the yarn turned off by what Messrs. Dobson and Barlow, Limited, have sent out is affording the liveliest satisfaction to everyone concerned. It is interesting to note that Mr. Eastham arrived in Osaka—the Manchester of Japan—in the year 1888, and at once took charge of filling the Naniwa Cotton Spinning Company's mill—one of 10,000 mule spindles. The whole of the spinning machinery, as well as the preparation, was supplied from the Kay-street Works, Bolton. The factory is of one storey only, the scutcher-room standing by itself, while the cards and frames are on one side the mill premises, the mules in the centre, and the reels and hand-presses on the remaining side. From Osaka Mr. Eastham went to Yawata, near Kioto, to superintend the completion and filling of the Yawata Cotton Spinning Company's mill of ring spindles. Here, again, the whole of the spinning and preparation machines were supplied by Messrs. Dobson and Barlow, and, as at Osaka, gave the utmost pleasure from the start. Returning to England, Mr. Eastham went out to Japan again in the year 1890. The success of the Bolton machinery at the Naniwa Company's mill had been so marked that the directors placed with Messrs. Dobson and Barlow an order for spinning and preparation machinery for 25,000 ring spindles, and invited Mr. Eastham to return to Osaka. Accordingly our townsman went out a second time, and now states that the machinery in the various departments—this mill is one of three storeys—is working, and has been from the commencement, in a really first-class manner. At Osaka, and in other towns, Messrs. Dobson and Barlow's machinery is held in very high repute. Considering that the spinnings in Japan range from 10's to 30's (the average numbers being 18's), the fact that good

reports continue to come from the East, where the firm have such an extensive connection, must be very gratifying to Messrs. Dobson and Barlow, Limited. It proves that the machinery for the coarsest counts can be turned out quite as easily and in a condition as perfect as that for the finest spinnings, which has done so much towards establishing the fame of our leading local machine making firm."

News in Brief.

ENGLAND.

Ashton-under-Lyne.

The building of the mill belonging to the Rock Spinning Co. has reached its second storey.

Blackburn.

A meeting of the Blackburn and District Cotton Spinners' and Manufacturers' Association was held on Monday night, when it was decided, on account of the settlement of the Stalybridge strike, to abandon the idea of running the mills short time.

This week the experiment of weaving by electricity has been tried with perfect success at the well-known loom works of Messrs. Henry Livesey, Limited, Greenbank, Blackburn. The works are illuminated by electric light, the electricity being generated by a large dynamo, and taking advantage of this installation, a motor has been fixed in one of the upper rooms by Mr. Thomas Barton, of Blackburn, and drives the identical loom which secured to Mr. Livesey the medal at the Paris Exhibition. This loom, of which there are hundreds of fac-similes running in Blackburn mills, has a 44 in. reed space, and with the electric power is being worked at the rate of 210 picks per minute, but a higher speed than this might be attained if desired. Of course there would be no advantage in driving a large number of looms by electricity, but where there is an installation of electricity for lighting purposes, as for instance at the Technical School, a few looms may be worked to advantage by electricity. Again, anyone having the electric light laid on to his house might, with the aid of a motor, run a couple of looms. On Wednesday the committee of the Technical School visited Messrs. Livesey's, in order to see how the experiment works before applying this motive power to the looms at the school.

Bolton.

The following circular has been issued by the secretary of the Masters' Association:—"In consequence of the settlement of the Stalybridge dispute the action decided upon at the general meeting of your Association on the 29th ult. will not take place. It has been very satisfactory to your committee to find that they have been so well supported in the line of action they recommended, firms owning no less than 5,028,450 spindles out of a possible five and a half millions having agreed to run short time."

Burnley.

The new universal list for weaving, which has been agreed to by the joint committee of employers and employed, is eliciting a good deal of opposition from the Burnley manufacturers, and a special meeting of the trade will shortly be called to consider it. The employers here contend that they have been very unfairly dealt with. In the aggregate the prices will be raised 1½ to 2 per cent., and there is a further disadvantage to local manufacturers in the omission of what is known as "the throstle twist clause" from the new standard.

Bury.

It has been stated that the notices at the mills in Bury, as the adoption of short time, have been withdrawn, but this is only partially correct. At several of the mills they have not been withdrawn, and one or two of the biggest will go on two or three days a week. At some of the other mills there is a great scarcity of warps, and many looms are stopped.

Great progress is being made with the erection of the quadruple expansion engines at the new Peel Mill, which are being put in by Messrs. Musgrave and Sons, of Bolton. Machinery from Messrs. Platt Brothers is constantly arriving, and every effort is being made to get the mill thoroughly equipped and ready for running at an early date.

The operative spinners of Bury are indignant because one or two local concerns run their spinning mills alternate weeks only, and they have passed a resolution which leaves an impression that they are determined to run the mills for the masters if the masters don't do as they are told. The resolution is as follows:—"That the system of alternate weekly stoppages of a portion of the spinners at several firms in the town be not tolerated further, and that the committee and officials of the association deal with the question in such a manner as will effectively abolish the system." The spinners assert that this is an endeavour to keep their

funds at a low ebb, and that it costs them at least £5 a week, or £200 a year.

On Saturday morning a deputation from the employes of Messrs. Adam Ashworth and Sons, at their Fernhill Hat Works, met the employers and representatives of the Employers' Association at the Temperance Hall, Henry-street, Bury, when they arrived at an amicable settlement of the dispute. The employers wished to pay the workpeople 1s. 10d. per doz. for the trimming of the ordinary lustra hat, and 2s. for the special, while the employes asked that the prices should be 2s. and 2s. 2d. respectively. A compromise was arrived at by which the prices will be 1s. 11d. and 2s. 1d. The opportunity was taken to ventilate another grievance affecting the hardeners. This was a question of weighing, and the firm agreed to adopt the same system as obtained at Messrs. Lucas's Works. An agreement was also arrived at by which in future strikes and lock-outs will be avoided, each side to submit any grievance to the associations' secretaries, and if they fail to agree, to call the two committees together, and confer on the matter. The dispute affected between 400 and 500 workpeople.

Farnworth.

Mr. Joseph Riley, manager of Bankfield Mill, Ringley, belonging to Messrs. Whittaker, died last week, and was interred on Monday.

Great Harwood.

The Union Mill Co. of this town, have placed their order for all winding, beaming, and sizing machinery with Messrs. Howard and Bullough, Ltd., whose well-known machinery of this class is in use at nine-tenths of the Harwood mills. The special merits of the machines of this firm for the class of work intended to be produced are well-known.

Heywood.

On Tuesday, Miss Clara Cronshaw, only daughter of the Mayor of Heywood, who is managing director of the Gigg Paper Mills, was married at Heap Bridge Chapel to Mr. John Howarth, of Whitefield, only son of Mr. Isaac Howarth, of Manchester.

The mills in Heywood and district have resumed work in accordance with the agreement arrived at. Amongst the operatives the terms of the agreement have been very adversely criticised. The spinners especially do not like the "shelving" of the non-union question, and their opinions on it are expressed very strongly. Amongst the cardroom workers the discontent, though evident, is not so great as amongst the spinners. The lockout has caused considerable distress in the town.

At the Bury County Court, Messrs. C. E. Crabtree and Co., cotton and waste merchants, of Heywood, sued Robert Bruce, also a cotton and waste dealer, of Moorfield Mills, Heckmondwike, for £187s. 11d., as compensation for loss sustained by them through breach of contract entered into on December 9th, 1891. The contract was for best roller ends, second roller ends, and laps, but a few weeks after the goods were delivered the defendants refused to accept them. His Honour gave a verdict for the plaintiff for £11 15s. and costs, less 15s. and the auctioneer's commission.

At a meeting of weavers held at the Conservative Hall, Heywood, on Monday night, to consider the position of the local Weavers' Association in reference to the lockout, the President said that during the past three weeks the society had paid away £200, which was a large item, and the committee felt that they were not so secure as hitherto. They asked the members to pay a small increased contribution for three or six months to help to place the society again in a sound financial position.—A member asked if the committee felt crippled now for want of funds?—The President: No; not in the true sense of the word, but we feel weaker than formerly. He pointed out that a levy of 1d. per member per week for 12 months would bring in over £300.—A resolution was adopted that a levy of 1d. per member per week be made for six months. It transpired that there were over 700 new members.

Haslingden.

It is expected that the large weaving sheds in Haslingden, containing over 12,000 looms, will commence working short time immediately. The Paghouse Mill Co.'s shed, containing over 600 looms, is closed, and it is not known when the same will recommence work. The local shoddy trade is also very dull, and profits are cut down very fine.

Kidderminster.

Mr. Carl Phillips, who has been for many years traveller for Messrs. Jas. Humphries and Sons, has joined the firm of Messrs. Oldland, Naylor, Lloyd, and Co.

Leeds.

The annual visit of members of the Clothworkers' Company of London to the Textile, Dyeing, and Fine Art Departments of the Yorkshire College, all of which are supported by the Company, will take place on the 18th instant, when the visitors will be conducted over the

branches of the institution indicated, and reports describing the work accomplished during the year will be presented.

London.

The sixth ordinary general meeting of the Imperial Russian Cotton and Jute Factory, Limited, took place on Tuesday at Winchester House, Old Broad Street. Mr. N. Harris, who presided, said that the past year's trading had not been very successful, but they had had to contend with the failure of the crops, the great famine, and the keen competition of the northern manufacturers. These were the chief causes of the diminution in the profits, and the consequent inability to recommend a dividend. Since the new year this state of things had materially altered for the better. Prices were improving, and a fair demand for manufactured goods had taken place. The outlook for the harvest was promising, and they expected to have a good business this year to make up for the past bad one. No efforts had been spared by the officials and staff, and the management at Odessa had been fortunate in only making a small bad debt, part of which would probably be recovered. He could see no reason for the present low price of the shares. Of the soundness of the business he had no doubt, and the position should be judged by the average of a number of years. During the past four years the company had distributed 33 per cent. The factory was in excellent order, and the land, consisting of 33½ acres, had much improved in value. The shares were pretty firmly held, not more than 120 having been transferred during the last six months. The report was unanimously adopted.

Leicester.

A fire broke out on Saturday night on the premises of Messrs. Davis, Moore, and Co., hosiery manufacturers, Leicester, but was got under before the flames reached the main buildings. The glove department was, however, destroyed.

Liverpool.

The death took place last week of Mr. Thomas Fairclough, a well-known cotton broker. On Monday he was potting plants in his greenhouse, using patent manure. He cut his hand with a broken pot, and after three days' illness died of blood-poisoning.

Manchester.

Messrs. Wainwright and Sons, 2, Pall Mall, Manchester, publish a handbook shewing the classification of all exhibits at the forthcoming Chicago Exposition, which will be of considerable service to all intending exhibitors and visitors.

Mr. W. J. Galloway, son of Mr. John Galloway, jun., of Manchester, has been invited by the Executive of the South-Eastern (Rugby) Division of Warwickshire to contest the seat at the next general election on behalf of the Conservative party, and has accepted the invitation.

An accident of a serious character occurred on Saturday at the works of Messrs. Charles Macintosh and Co., india-rubber manufacturers, of this city. About noon a portion of the roof of one of their workshops in Cambridge-street fell, and injured a number of people who were at work in the room underneath. Eleven of these were taken to the Manchester Infirmary, most of whom, however, have since been discharged.

Middleton.

On Saturday a meeting of operative spinners was held at the Bricklayers' Arms, when there was a very large attendance. A very strong feeling was expressed against work being resumed until the non-unionists employed at Stalybridge had been discharged. It was pointed out that, seeing the executive had decided that work should be resumed, those who did not return to work would receive no further pay from the association, and this seemed to have an effect upon the meeting. After a lengthy and animated discussion it was resolved to abide by the decision come to by the executive. A further resolution was passed severely censuring the representatives of the operatives for agreeing to a settlement so long as union men were compelled to work with non-unionists; and a vote of sympathy was passed with the unionists of Stalybridge.

Oldham.

The Royal Mill is stopped through putting in new boilers, and other work in connection with the new mill (No. 2) which is being erected.

Messrs. Cooper Bros., of Royton, have converted their firm into a limited company under the name of "The Beech." The company takes over one of the Downey Mills.

The mill of the Prince of Wales Spinning Co. was unable to resume operations on Monday, in consequence of the work of tripling the engines not being completed.

Mr. Fitton, of the Textile Spinning Co., has been appointed carder at the Belgian Co. in the vacancy caused by the present carder having accepted a similar appointment under the Ellenroad Mill Company.

The Pearl Mill is now rapidly approaching completion, and if one may be pardoned the expression, it is

beginning to look more like a mill. It is almost windowed in, the chimney is nearly finished, and the outbuildings are in an equally forward condition.

Considerable progress is being made with the putting down of the machinery at the Ellenroad Spinning Co.'s mill, and in the course of a few weeks yarn is expected to be produced. The steam engines will be christened to-day (Saturday).

Work was commenced on Monday, after a five weeks' stoppage, at the mill of the Oldham Albion Spinning Co. The stoppage was caused by a serious engine breakdown, the work in connection with which has been carried out by Messrs. Buckley and Taylor, of the Castle Ironworks, Oldham. We are informed that the engines commenced working very well.

The extensions to the premises of the Werneth Spinning Co. are nearing completion, and will shortly be ready for the reception of machinery. It was originally intended to fill the addition with 40,000 mule spindles, but at the quarterly meeting of the shareholders on Tuesday some discussion took place about placing in ring spindles only. It was stated that the directors had had the matter under consideration, and it had been suggested that they should fill one room with rings, say about 20,000, and another room with mules. If they did that it would not, it was thought, in any way interfere with the engines, which had already been ordered. However, the matter was left with the directors. The chairman announced that no machinery had yet been ordered. The steam engines, of about 1,200 horse power, are being supplied by Messrs. Pollitt and Wigzel, of Sowerby Bridge, and the mill gearing by Messrs. Whittaker, of Oldham. The directors were empowered to negotiate a mortgage not to exceed £25,000.

At the monthly meetings held in Oldham this week of the members of the Operative Spinners' Association, the principal topic of discussion has been the terms come to in settlement of the strike at the Stalybridge Spinning Co. and the termination of the lock-out. The Executive Council of the Amalgamated Spinners' Association have come in for severe condemnation, and strong language has been used towards them. It is the non-unionist question which has roused the ire of the workers, who consider that all the boast of the past few months that the "knobstick" would ere long be a "dead horse," has now made them look foolish, as at the first sound of battle they have turned tail. A speaker at one of these gatherings put the position thus:—"They boasted of being able to lay their hands on £150,000 but yet surrendered after three weeks' stoppage on one of the greatest principles connected with trade-unions. This meant that the whole plan of campaign against the non-unionists laid down by the leaders was a mere sham." Resolutions—in some instances amounting to a vote of censure—have been passed condemning the Executive for agreeing to the clause relating to the employment of non-unionists by the Stalybridge Spinning Co.

Preston.

Penwortham Mill was offered for sale on Monday afternoon, but without success.

Ramsbottom.

On Monday morning, after being stopped for about a fortnight, the Waterside Weaving Sheds, belonging to Messrs. S. Harrison and Sons, commenced working full time.

The Victoria Mill Co. recently treated their workpeople and friends, to the number of about 200, to a trip to Liverpool, in celebration of the marriage of Mr. Henry Tattersall, managing partner of the firm. The weather being fine, the outing was much enjoyed.

Rochdale.

Mr. Fred Nelson has commenced flannel manufacturing in a portion of Providence Mill, Milnrow. A large number of looms are already at work, and numbers of others are being erected.

Yesterday week, the Moss Mill Spinning Co., Rochdale, was charged by Mr. James Pearson, factory inspector, with employing five young persons at five minutes to six on the morning of the 13th of April last. Mr. James Clegg, the manager, admitted the offence, and a fine of 21s. and costs in each case was imposed.

Stockport.

A meeting of the directors of the new ring spinning mill has been held, at which it was decided that the corner stone of the mill should be laid on Saturday afternoon, May 21st. Mrs. Giles Atherton, wife of the chairman of directors of the new company, has consented to perform the ceremony. A sub-committee has been appointed to make the arrangements for the coming event.

Yeadon.

A meeting of factory operatives, promoted by the Yeadon, Guseley, and District Trades-union, was held in the Yeadon Town Hall Schoolroom on Tuesday evening, to consider the overtime question. There was a fairly large number of operatives present. Mr. H. Lockwood, secretary of the Union, presided. The following resolution was carried unanimously:—"That,

having regard to the heavy physical strain and loss of leisure and educational advantages entailed by the long hours of labour which obtain in this district, this meeting is of opinion that all overtime should be either abolished or paid for at an increased rate, and pledges itself to support any action which may be taken having that object in view.

SCOTLAND.

Aberdeen.

Mr. Herbert Wilmot Hollands, one of the managing partners of the firm of Messrs. Richards and Co., flax and jute spinners and manufacturers, Bradford Works, died last week. Two or three months ago Mr. Hollands contracted a severe cold, which developed into consumption. He was a man of considerable business capacity, and his death at the early age of 28 years will be deeply regretted by his many friends. He was the eldest son of Mr. Wilmot Hollands, of Heathfield, Keston.

Dundee.

At a meeting of jute yarn merchants on Tuesday it was decided to stand out against a further reduction of Sils. cops. At the present time the minimum price is 1s. 7d.

It is reported that an old-established firm of spinners and manufacturers in the West end of Dundee intend to close their works at the end of this week. The works have been running on short time since the movement was started. About 500 hands are employed by the firm.

Mr. Alexander Henderson, merchant and manufacturer, South Dudhope Works, has just attained his business jubilee. During his connection with Dundee Mr. Henderson has taken a very active part in all philanthropic and charitable work. Among his operations he is looked upon with the very kindest feelings, and having regard to the occasion a deputation representative of the heads of departments have presented him with a handsome illuminated address. Four of the parties signing it have been 32 years in South Dudhope Works, two have been between 26 and 27 years, and the others from 15 to 25 years.

An open-air demonstration under the auspices of the Dundee and District Mill and Factory Operatives' Union was held on Saturday afternoon in Albert Square, Dundee, when the Rev. Henry Williamson denounced the resolution of the masters reducing the wages 5 per cent. as an oppression. Resolutions were thereafter carried condemning the masters' action as unfair and unjustified by the state of trade, and resolving to supplement the evidence given before the Royal Commission on Labour. In the course of the proceedings Mr. Williamson submitted a letter, which he had received from a worker, to the effect that a large proportion of the operatives in Camperdown Jute Works, Leocher, had received intimation that their wages would be reduced 10 per cent. instead of 5 per cent.

Glasgow.

The weaving trade of Glasgow is not improving. The workers on strike are being aided by the Women's Association. The very fact of masters wishing to reduce wages shews in what a state the trade is at present.

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 to date for the year. The first line refers to cotton goods, and the second to linen:—

	India and China.	U.S. and Canada.	W. Indies & S. America.	Australasia.	Africa and Egypt.	Continents.	Totals.	Totals for year to date.
	£77,375	8,503	2,085	3,071	215	485	91,834	1,596,131
	279	11,287	138	746			12,250	344,271

The following are the total values of the exports for the same nineteen weeks of last year:—Cotton, £1,476,882; linen, £305,843.

Dr. James Thomson, Emeritus Professor of Civil Engineering in Glasgow University, died on Sunday. Professor Thomson was born in Belfast in 1822. His father was Professor of Mathematics in the Royal Belfast Academical Institution, and subsequently became Professor of Mathematics in Glasgow University. Many still alive remember the college career of his two sons, James Thomson and William Thomson (Lord Kelvin), who passed through every class with credit, and through many with unrivalled distinction. James Thomson chose the profession of a civil engineer, serving his apprenticeship in the works of the late Sir William Fairbairn. He began business in Belfast. His inventions of a vortex water-wheel and a centrifugal pump became widely known, and he was intrusted with work both at home and abroad, and in particular designed and constructed great pumps for the drainage of sugar plantations in Demerara. He was also engineer to the Belfast Water Commissioners. In 1857 he became Professor of Civil Engineering in Queen's College, Belfast. In 1872 he was elected

to fill the Glasgow chair. Professor Thomson maintained his zeal for scientific pursuits, and in March of this year he completed a paper on the grand currents of atmospheric circulation, which was chosen by the Royal Society as Bakerian Lecture for the year.

Vale of Leven.

The dyeing trade in the Vale of Leven is becoming worse, and half-time is now resorted to. In one large establishment they are going full time, but dismissing hands. The calico-printing works are fortunately in a better position.

IRELAND.

Belfast.

The Flax Supply Association, in its circular for April, issues, in addition to the usual tables, an extra one, giving corrected figures for the imports of flax from Belgium in March, which by a clerical error in the Board of Trade returns for that month were very misleading. The imports of flax for April, 1892, are 18 1/2 per cent. in quantity and 3 1/2 in value in excess of April, 1891. From Russia alone the excess amounts to 2,977 tons, or 57 1/2 per cent. Embracing the four expired months of the year, there is an increase of 10,113 tons, or 38 1/2 per cent. in the total quantity, and 25 1/2 per cent. in value over similar four months last year. Yarn exports continue to fall off, and an improvement noted in January has all disappeared. Comparing April just ended with April, 1891, exhibits a decrease of 7 1/2 per cent. and 7 1/2 per cent. in quantity and value respectively; but the four months exhibit a smaller decline, being only 3 1/2 per cent. and 3 1/2 per cent. under corresponding four months in 1891. The shipment of linen thread in April is less by 8 1/2 per cent. in value than in April, 1891. Linen piece goods: In these goods there is a marked improvement, the exports in the month just closed being 25 1/2 per cent., and 17 1/2 per cent. in quantity and value respectively over similar month last year. To the U.S. of Colombia the increase is 114 1/2 per cent., to United States of America 62 1/2 per cent., to Foreign West Indies 32 1/2 per cent., and British North America 11 1/2 per cent.; on the other hand, France has decreased 79 1/2 per cent., Brazil 38 1/2 per cent., Australia 37 1/2 per cent., and British East Indies 21 1/2 per cent. For four months the increase is 4 1/2 per cent. and 1 1/2 per cent. respectively.

Miscellaneous.

ENGLISH BROCADES AND FIGURED SILKS.*

By C. PURDON CLARKE, C.I.E.

(Continued from Page 333.)

Before commencing the notice of the examples of silks kindly lent by different manufacturers to illustrate my paper, I must mention a source of strength, especially in the matter of design, and that is the practice of engaging looms, either in factories or at the homes of the weavers, by the leading furnishing and decorating houses. This has, in recent years, done much to remove the reproach of producing stuffs artistically inferior to the French. Charged with the decoration of palaces and the houses of the wealthy, these firms—forced to seek beyond the stock patterns of ordinary commerce—have, therefore, engaged the assistance of skilled artists and designers to produce patterns which, to a great extent under their own personal superintendence, were put on the looms, and carried to a perfection the maker for the general market could not afford to attain. Although the copyrights of these designs were generally secured to their owners, yet the influence spread, to the general benefit of all concerned. Some of the principal amongst these firms have lent examples of these engaged silk patterns, and a description of these will be given in their turn.

This system of engaged patterns is but a development of the old custom of engaged looms; and I am informed that the bulk of the so-called manufacturers in Lyons do not actually possess a single machine, but, free from the heavy strain of capital sunk in machinery and rents of large factories, devote their energy and capital to negotiation, first, of the designs, and the purchase, dyeing and preparation of raw material, then the disposal of the goods when made.

In attempting a description of the figured silks I have to congratulate my audience and myself that I resisted the proposal to include

other classes of English silken fabrics with brocades and figured silks, as no evening would have sufficed for the purpose. Indeed, I feel that the few lines of notice, which is all that my space permits, to a small selection of typical examples, is not in any way fair to the lenders of art works, which have cost them something more than time and money. In several cases I collected sufficient materials for a good monograph in the history of a single factory; and my hope is, that this poor effort of mine will bring in separate papers on different localities, many of which will repay the explorer by their richness in old-world memories, whilst up to date in practical working.

Beginning with Spitalfields, where the handloom factory of Messrs. Warner and Co. is one of the largest and most important. Amongst their silks will be noticed a large cloth-of-gold brocade—a veritable Indian *kimcob*—the order coming from India, where it is impossible to hand-weave stuff of such great width. The next is a damask pattern, designed by Owen Jones 30 years back, the following details of the manufacture of which, I think, will prove interesting. This fabric is woven in a handloom controlled by three Jacquard machines, requiring a *mounture* and harness, consisting of 29,088 threads in the width of 63 inches. Every one of these threads has a work to perform in forming the pattern, and, in the mounting of the loom, has been attached by a small glass pulley to one of the warp threads. The warp used in this piece of 60 yards used up 1,022 miles of silk thread, and, in addition, 757 miles of silk was consumed in the weft. Each of these warp and weft threads consist of 15 fine threads, as produced by the worm—thus the piece contains 26,355 miles of silk as rolled off the cocoon, requiring about 100,000 cocoons to produce this quantity. The lengths of the repeat in the design is 28 inches, and in consequence of the fineness of the texture of the material, 9,312 perforated cards had to be cut. These cards are laced to form an endless band, and measure 1,000 yards in length and weigh 5 1/2 cwt. The whole pack of cards has to be turned over each time the 28 inches of design is woven, each card taking its turn singly against the needles in face of the Jacquard cylinder, so raising and depressing the threads of warp, thus causing the openings through which the shuttle passes. This small pattern, only 28 inches long, required to be placed on ruled paper, sufficiently large to shew visibly each thread. This measures 16 feet by 9 feet 3 inches, and contains 5,587,000 small squares.

Messrs. Collinson and Lock shew some Spitalfields silk, which cannot be rivalled for beauty of design or technical excellence of manufacture. The Louis XVI. brocade, in silver figure on a rose Du Barry ground, was made for the Palace of Charlottenberg; and the heavy cloth-of-gold brocade, which glows with the tints of a late autumn sunset, will in a few days grace the walls of a saloon in the Rue de Rivoli. Messrs. Gillow also shew valuable reproductions of early 18th century loom work, and can claim an unbroken history of over 200 years' connection with Spitalfields furniture brocade. Messrs. Helbronner are the possessors of many special designs, and besides their Spitalfields productions they employ many handlooms in the old Huguenot settlement at Braintree in Essex.

Liberty's dress silks are well-known, and amongst these Spitalfields and Braintree occupy the first place, although, for lighter figured silks, the examples from Macclesfield, Halifax, and Glasgow offer beauty and quality, which no similar foreign silks can equal at the price. Messrs. Debenham and Freebody have never failed to support British-made silk, and have used their utmost influence in securing for Spitalfields the orders for the richest Court dresses of many seasons past.

Some examples of Messrs. Bailey, Fox, and Co.'s loom work are also shewn—figured silks and brocades—and are of equal rank with the higher-class Spitalfields manufactures. The other Spitalfields silks, which have been lent to illustrate this paper, include examples from Messrs. Buckingham, Messrs. Burnet, and Messrs. Goodyer, and are instances of the great national characteristic of doing things

* A paper read before the Society of Arts, April 12, 1892.

thoroughly and well, when we properly set about it. Examples of these silks, at the Paris Exhibition of 1859, were challenged by French manufacturers, who refused to believe that they could be produced in England; and I must own that I did not feel sufficient confidence to publicly claim such beautiful art works as English, until I had personally seen many of them on the Spitalfields looms; and looking back through old pattern books over 150 years old, I find that the power to produce these designs had always existed, only waiting for business men like Mr. Lock to come and set them on the right path.

Messrs. Walters' Essex factory, at Braintree, combines the Spitalfields hand-loom system with a large steam factory, where power-looms are ready to meet the demands for large quantities in the small limit of time that modern commerce is forced to demand. The damasks include reproductions of old Chinese stuffs, and the brocades for upholstery work are scarcely surpassed by the French looms. An interesting exhibit from Braintree is the original drawing of a design made by Prince Albert for some hangings for Buckingham Palace, in 1850, since which time Messrs. Walters have woven most of the silken walls there and at Windsor Castle.

Then, further north, the brocades from Messrs. Birmingham, of Leek, a town where silk is the principal industry; and, for dress purposes, the lighter but beautiful silks of Halifax, Macclesfield, and Glasgow, of which specimens have been lent by Messrs. Liberty and Co. I cannot attempt to give the names of more than a selection of manufacturers, and I know that I am doing an injustice to many weavers of brocades and dress stuffs by not mentioning them, especially the beautiful figured poplins formerly called "tabinette," which are made by such makers as Pim, Dunn, and Atkinson, of Dublin. But before leaving these examples, I should like to call your attention to a new direction in figured weaving, shewn by samples of loom embroidery from the mills of J. O. Nicholson, of Macclesfield. This suggests infinite developments, and especially merits the attention of artists, as it forms the solitary instance I know of in the whole art of weaving where, without labour or fatigue, the artist can direct the pattern, and, "fancy free," transport his thoughts to the stuff almost as easily and as speedily as he could with a brush of colour to a sheet of paper.

It was not my intention, when first taking up this subject, to do more than allude to the past, as the practical question before us is really that of the present and future, and about that future I have no doubt. Although for a period depressed—if not almost completely extinguished—figured silk weaving is not a moribund industry. Its vitality is proved by its present existence after a career of unmerited misfortune, for no other trade ever shewed such tenacity of existence as this industry when economical changes made it almost impossible for it to be carried on, except at a loss to all concerned. To assist you to realise the terrible result of the opening of our ports to foreign silks in 1860, the following details are more than sufficient. Before that date the number of looms in five centres of manufacture exceeded 57,000; in the year 1885, these had diminished to 4,400. It may be said that the cheapening of silk has been a boon to at least the female portion of the working classes, but my own feeling is that they would have been both materially and morally better off if they had remained the makers as well as the wearers of silken goods. Of its importance to us as a nation I need not say more than that France produces over £20,000,000 worth of manufactured silk every year, and exports of that to the value of £15,000,000, a sum which goes far towards paying for her import of corn from other countries. It only requires British energy to be thrown into this matter to enable us to rival and, I trust, excel in every branch of the silk trade as it has in the beautiful plushes and velvets of the Manningham Mill, which neither France nor Italy can equal; and the present superiority of France in questions of art is, I think, answered by the display of English-designed and woven silks here to-night. When closely

examined, this superiority of French art is found to be more apparent than real. Our weak point is that honesty of purpose is always striving after a perfection which is practically unattainable. It is this which renders the designs of our art students so often of little use to the manufacturer, and drives him to either educate his own draughtsman or rely on patterns purchased from abroad. Our students have been so thoroughly well taught the general principles of art and design that, in a manner, they are superior to the narrow requirements of any single trade. They are afloat without direction or purpose, on a sea of experiment, whilst the French designer is safely anchored to his half-a-dozen orthodox styles. With these he cannot be but safe, and often the only outlet for his energy is the alteration or modification of colour tones in a standard pattern, in order to suit the demands of passing fashion.

There has been of late a good deal of writing and talking about doing something for the silk industries—as if it was a question of charity—and ladies have been asked to shew their patriotism by refusing to wear, or use, anything but British-made dress silks and furniture brocades; so much so, that the leading ladies in the land have taken up the matter earnestly, and the Ladies' Committee of the Silk Association, under the presidency of H.R.H. the Princess Mary, Duchess of Teck, numbers amongst its enthusiastic workers and supporters the leaders of style and fashion; but, unfortunately, in the whole history of trade, we find that something more than an appeal to patriotism is necessary to save from destruction a decaying industry. Fortunately in this case, on every side there is evidence that, instead of failing, it is increasing in importance, and, like our native oak, though slow in growth will be great in maturity.

A step in the right direction has been the formation of the Silk Association of Great Britain, of which Mr. Thomas Wardle is the president; and this is, after all, but the revival of the old system of trade guilds amongst manufacturers for mutual support. In the Middle Ages such a society would be a chartered guild, armed with legal powers, and capable of restraining injudicious competition. But in this 19th century these powers have changed their form, and the Silk Association has broadened its basis by including in its members all those interested in silk, whether producers or distributors, and finally, representatives of the most important class of all the buyers. The Silk Exhibition in 1860 a complete success, was the work of the Ladies' Committee of the Association. Held at the house of Lady Egerton of Tatton, it was successfully carried out by a committee of ladies, who, earnest workers in the two great opposing political parties, sank their differences for a time, and harmoniously together achieved this great success. In fact, this good feeling of harmony is a characteristic of the silk trade, and, whilst gathering information, I was very much impressed with the kind feeling shewn towards each other by rival manufacturers. Of this perhaps Mr. Wardle is better entitled to speak than myself, only I cannot refrain from giving testimony to the earnest devotion and unselfish help he has freely given to all classes of silk workers, both before and since the first time I had the pleasure to meet him, when, at the Paris Exhibition of 1878, he practically founded the great industry in the manufacture of "Tussore" silk, in which, I am sorry to say, we have not kept pace with the foreigner, although the raw material is principally supplied from British territory.

Although I have been speaking in defence of machinery, I must admit that my own feeling is against it, as it requires so little human labour, and renders the problem of how to employ our population more and more difficult of solution; yet I cannot but feel that it is inevitable, and, therefore, only wish to see such an increase of trade that the number of people tending the machinery shall more than equal those who now produce the work by hand. One of the causes which will hasten the decay of hand-loom work is the difficulty of finding people to undertake it. The whole tendency of the age is against drudgery of any sort; and it is only by a long apprenticeship that the

hand and eye can be sufficiently trained to produce the fine weaving in the handloom. The modern boy will not submit to this apprenticeship. Over-educated for almost any class of manual work in the Board Schools, he is disinclined to take up work where no thinking is required, and to submit to a servitude which, in his opinion, brands him with the reproach of youth, and, in a measure, restricts his freedom. Nor is the effort which is being generally made, and which I see is changing the name of many of our art schools by calling them polytechnics for technical instruction, likely to help in this matter, as the very Act of Parliament which enables the cost of these institutions to be added to our already overburdened taxes, specifies that the practice of a trade shall not be taught, but simply the higher instruction, which, when acquired, turns out a possessor of a certificate who has a theoretical knowledge of every part of a trade, but who could not earn a penny loaf by a single day's work with his hands. I am not in any way speaking against our system of technical education as far as it goes, but only wish to warn you that something more than skilful foremen and managers is required, and in my opinion that what was supplied in olden times by the system of apprenticeship.

I have had unusual opportunities of seeing the practice of many arts in various parts of the world, and always noticed that where work was best done was where they thought and talked the least about it. The secret of the woven stuffs of Persia and Cashmere was the five or six years' apprenticeship in each branch of the craft; the complete absence of knowledge of any other style in the world; and, last of all, the immunity from changes of fashion, which enabled the people, from father to son, to go on producing the same designs with practically little variation.

[A report of the discussion on Mr. Clarke's paper will appear next week.]

COTTON WEAVERS AND THEIR "PARTICULARS."

IMPORTANT TEST CASE AT BLACKBURN.

On Monday, at the Blackburn Borough Police Court, a test case of great importance to employers and operatives in the cotton trade was heard. Mr. William Thompson, cotton manufacturer, of Boundary Mill, Blackburn, was summoned by Mr. J. T. Birtwistle, Inspector of Factories, for having on the 22nd April last, "being the occupier of a certain cotton factory, failed to supply to certain weavers in the cotton trade, to wit, Edward Ainsworth, and Rachel Singleton, who are paid by the piece, with particulars sufficient to enable them to ascertain the rate of wages at which they were entitled to be paid for their work," contrary to Sec. 24 of the Factories and Workshops Acts, 1878 and 1891.—Mr. R. C. Richards, barrister, London, (instructed by Mr. G. W. Carter), defended. Mr. Birtwistle having briefly opened the case,

RACHEL SINGLETON was called. She said she was a weaver in the employ of defendant, the Nos. of her looms being 121, 122, 123, and 124. She remembered the visit of the inspector on the 23rd April, during the dinner hour. She produced the tally boards of her looms. The width of her cloth was not given on the boards, nor was the reed, nor the change, wheel, pick, twist, and weft. Those particulars had never been supplied to her. She had four different kinds of cloth in her looms, at different prices. With the exception of the name of the sort and the price she knew nothing about the cloth.—MR. BIRTWISTLE: But you know that differences in those particulars affect the price?—MR. RICHARDS: I object to the question.—THE CLERK said the question was clearly admissible, as it contained the essence of the whole matter.—MR. RICHARDS: It is a question of contract.—THE CLERK: It is not a question of contract; you are summoned for not supplying certain particulars, and Mr. Birtwistle is asking whether certain material particulars had been supplied.—MR. BIRTWISTLE: Don't you know that any change in width or length, or weft, or in the No. of picks in the cloth, affects the price and alters the cloth?—WITNESS: No.—MR. BIRTWISTLE: Don't you know that you get more for 60 yards than for 50 yards?—MR. RICHARDS: I object to that. Mr. Birtwistle has asked his question and got his answer.—MR. BIRTWISTLE: Is this (handing up a ticket) the form of the beam ticket supplied with each new beam?—WITNESS: Yes.—And are those particulars stated thereon?—No.—MR. RICHARDS: I contend it is the duty of Mr. Birtwistle to put in the actual form supplied.—The Clerk allowed the objection.—Cross-

examined: The particulars supplied to me were the counts of weft, the wheel, and the headings. They were supplied with the beams, and also tickets similar to the ones produced. On the tickets a number was given opposite the word "sort"; but that did not tell the witness the sort of cloth she was weaving. The tickets were numbered 216 H, 216 E, 249 A, and 254 respectively. She did not know what those numbers meant except that they told her what her beam was. She was told at the time she got the ticket what she would receive per cut. There was a board posted on the wall of the shed, and she could identify her ticket by the board, and check her prices; but the board did not tell her what kind of cloth she was making. She could at any time compare her ticket with the board and see if she was receiving the price she had agreed to make the piece for. She understood that she would be paid by the board, and she agreed to work at the prices given on the board. She was perfectly satisfied with the arrangement, and did not work by any other standard.

Re-examined: Do you say that the number given on the beam ticket and the corresponding number on the board tell you the sort of cloth you are weaving?—No.—Does it tell you whether the cloth is 100 or 200 yards long?—(Mr. Richards objected to Mr. Birtwistle cross examining his own witness; but the Clerk ruled that he was perfectly entitled to have the evidence explained.)—Mr. BIRTWISTLE: You say you were supplied with the counts of weft. In what way were you supplied?—By the tackler.—From the number you don't know what kind of cloth it is, do you?—No.—And don't you have to ask the tackler?—(Mr. Richards objected to the question, but the objection was overruled.) Witness stated that the tackler told them out of a little book the counts of the weft, and wheel, and heading, and price.—The CHAIRMAN (Mr. W. A. Abram): When you are supplied with the materials for weaving a cut of cloth, have you anything more to do than to put your weft in and get the loom going? Is that all?—WITNESS: Yes.—The CHAIRMAN: What I want to get out is the information she wants is not the kind of cloth, but what she is going to be paid for it.

Mr. BIRTWISTLE offered himself as a witness and was sworn. He said he visited the works at the time mentioned and saw the witness, Singleton. He enquired from her what particulars were supplied to her with her work, and she produced the tally boards handed in.—Mr. Richards objected that apparently Mr. Birtwistle was reading from notes.—Mr. Birtwistle replied that they were notes made at the time and in the presence of the representatives of the firm. Continuing, he said he asked Singleton if any other information was supplied to her than what appeared on the tally boards, and a beam ticket was produced to him. He asked for and obtained a copy of the ticket. He drew the attention of the representative of the firm to the fact that the following particulars, which were omitted, were required by the Act to be given: 1, width of loom; 2, width of cloth then being woven in the loom; 3, counts of reed and numbers of ends in the warp; 4, change and pick wheel with dividend; 5, length of each cut or piece in yards; and, 6, counts of twist and weft. None of those particulars were given on the ticket supplied.—Mr. RICHARDS: I should like to ask you where in the Act you find the particulars which you have just given?—Mr. BIRTWISTLE: They are not stated at all in the Act.—You don't find them within the four corners of the Act?—I don't.—The CLERK: I understand that Mr. Birtwistle says that the particulars he names are what he considers necessary particulars.—Mr. RICHARDS: We shall be perfectly content if he says that as a matter of opinion. But he doesn't find them in the words of the Act.—

Cross-examination continued: Do I understand that it is your opinion that irrespective of any contract which the weaver may have made, the weaver is entitled to receive all those particulars?—He is entitled, in my opinion, to receive all those particulars irrespective of any contract.—Then in your opinion a weaver has no power to make any contract independently of the particulars you have given?—I don't say he has no power to make a contract, but the particulars can be given and the contract made afterwards. I have nothing to do with the price that is paid; all I have to see is that the particulars are given.—Then your opinion is that whatever the contract these particulars must be given?—Yes.—The CLERK: That is if the weaver is paid by the piece?—Yes.—The CHAIRMAN: Is the Act made to apply to all current contracts?—Yes, in all textile trades.—Mr. Birtwistle having intimated that this case was closed,

Mr. RICHARDS addressed the court in a speech which lasted over an hour. The learned counsel said that he might have advised his client to take the objection that the summonses on the face of them were irregular, inasmuch as, if Mr. Thompson had committed a tort, he had done so on the day when the beams were supplied, and not on the day when the inspector visited the shed. He might also have objected that he summonses did not disclose the relationship between

the defendant and Singleton and Ainsworth, simply describing the latter as weavers. But Mr. Thompson was desirous that the case should be fought on the broad issue, and he was prepared to contend that Mr. Thompson had not only not failed to supply the particulars required by the section, but had given more particulars than he was called upon by the section to give. The evidence of Mr. Birtwistle's witness was that when the beam was given to the weaver she was given along with it a ticket. The ticket bore a number, for the purpose of comparison with a board posted in the shed, and there was further evidence that when the work was given the tackler told the weaver the amount of wages per piece she was entitled to receive, and that she would receive. He should contend that the board was unnecessary after the price per piece had been told at the time the beam was given, but it served the useful purpose of giving the weaver an opportunity of checking the information and price given by the tackler. They had it in evidence further that she was given such particulars as would enable her to ascertain the rate of wages which she was entitled to receive for her work. They now came to the general rules regulating the construction of statutes and to examine the clause in the light of the dicta afforded by well-known authorities. Before doing this he would interpolate that the clothmaker had particular instructions to give to any weaver the length of the cloth woven, provided the weaver asked for it. Resuming his argument, he urged that the section was not applicable to the cotton trade only, and that the Legislature obviously never contemplated compliance with any list or standard of which the inspector might be thinking, as there was no list which would apply to all the trades mentioned in the section.—The CHAIRMAN: What you say is anything but obvious to me.—The CLERK: The information given to the weaver is surely not required by the winder or reeler?—The CHAIRMAN: Mr. Birtwistle has indicated a number of particulars that must be supplied, and you say that unless those items apply to all the trades specified this case breaks down.—Mr. RICHARDS: That is not my contention, but answering the learned clerk's question as to the reeders and winders, I contend that the responsibility is thrown upon Mr. Birtwistle of shewing that in all these departments of labour there is a recognised list regulating the amount of pay. But bearing in mind the dictum of Lord Coleridge that you cannot add new terms to any Act, I say it is quite impossible for Mr. Birtwistle to add what is virtually a new term to this Act by the introduction of particulars which if the Legislature had intended it would certainly have been included in the Act by way of a schedule.—The CLERK: What have you to say to the words "such particulars as are necessary"?—Mr. RICHARDS said he was coming to that. It being the first case of the kind he was anxious to state it as fully as possible. Coming to the word "particulars," he contended that it must be construed in its ordinary meaning, and not narrowed down to any list or standard. The word "rate" he took to be applicable to the particular standard taken by the two contracting parties, and he thought if the employer furnished the operative with a list which enabled him to check, whether or not he received the rate agreed upon, that was a sufficient compliance with the Act.—The CHAIRMAN: He doesn't want the rate, but information.—Mr. RICHARDS maintained that if an operative was told that the price paid was so much per cut, it was a sufficient compliance with the Act.—The CHAIRMAN: But he wants to be satisfied that he is paid what he is understood to be receiving.—Continuing his address, Mr. RICHARDS urged that the word "entitled" was clearly used in the section solely with a view to something to which one of two contracting parties was entitled by virtue of a contract.—The CLERK: Do you say that the weaver is only entitled to know the rate of payment per cut? Suppose a weaver wants to know how much per yard she is entitled to? Is she not entitled to that?—Mr. RICHARDS: Not if she has entered into a special contract to be paid by a special method.—The CLERK: Is she not entitled to know the length of her cut?—Mr. RICHARDS: That altogether depends on the contract.—The CHAIRMAN: Do you contend that all the information intended by the Act to be given is how much the weaver is to be paid, and nothing more?—Mr. RICHARDS: That and nothing more, provided she has entered into an agreement.—The CHAIRMAN: Then if an employer tells a weaver that she is entitled to 9d. or 1s. per cut that is all the information she is entitled to?—Mr. RICHARDS: Yes, that is so, if she agrees to accept it at the time. My contention is that any enquiry that goes behind the contract between the parties is going beyond the section.—The CLERK: But she must be unable to ascertain whether the employer was paying the price agreed upon.—Mr. RICHARDS: But the weaver takes the piece off the loom.—The CHAIRMAN: You say that the Act was passed to enable a person who has been told that she would get a shilling, to get that shilling. Is that all?—Mr. RICHARDS: Yes.—The CHAIRMAN: Was there such a thing in vogue before the passing of the Act that Parliament had to step in and compel people to pay a shilling they had

promised to pay?—Mr. RICHARDS: We should be led into a long enquiry if we went into all the circumstances.—The CHAIRMAN: We have had a long enquiry to-day; but I want to understand your argument as you proceed.—Mr. RICHARDS: My point is this, that where a weaver has contracted, having in view a certain standard—and the evidence in this case is that the weaver did contract—that what she is entitled to get is what she can enforce according to the contract.—The CLERK: The evidence is that she is paid by the piece.—Mr. RICHARDS: Supposing the weaver sues the employer for the wages earned under the contract—upon what basis would she lay her claim?—The CLERK: That is the point.—Mr. RICHARDS: I contend she would lay her claim, and the law would compel her to do so, according to the terms of the contract. It is simply a contractual relationship that the section has regard to. Then with regard to the question of convenience, I submit that with the cotton trade the most serious inconvenience must arise if such particulars as Mr. Birtwistle says the weaver is entitled to were insisted upon.—The CLERK: That is what is contemplated by the proviso.—The CHAIRMAN: The clause most distinctly contemplates information being given which, if communicated to other parties, would be most severely punished.—Mr. RICHARDS: I think your worship will scarcely take upon yourselves the responsibility of saying what particulars, when communicated, will produce detriment or otherwise.—The CHAIRMAN: I think the disclosure of the particulars you claim to be intended by the Act could scarcely be said by any possibility to injure anyone in the slightest degree.—Mr. RICHARDS: They might or they might not, but the Act says that whatever the particulars given, they shall not be disclosed. The onus rests entirely on Mr. Birtwistle to shew the Court conclusively that the particulars he has set out to-day are the particulars contemplated by the Act.—The CLERK: Mr. Birtwistle, who is a skilled witness, says these particulars are necessary in order to ascertain what rate is to be paid. You have offered no evidence, skilled or otherwise, to contradict that.—Mr. RICHARDS: I should say that Mr. Birtwistle is not a skilled witness.—Mr. BIRTWISTLE: I beg your pardon.—Mr. RICHARDS contended that according to his argument skilled evidence on that point was unnecessary. In conclusion he urged that the Legislature never contemplated any list in any of the industries included, but simply the rule of common law prevailing before the Act, and that in the absence of any explicit direction to that effect it was impossible for Mr. Birtwistle or anybody else to read into the Act provisions which the Act did not contain. As regarded the case in point, the very particulars Mr. Birtwistle now asked for were submitted to the Legislature and rejected by them. Could they have a clearer proof of the intention of the Act than that?—The CHAIRMAN said they could hardly accept counsel's statement as to what passed in Parliament.

Mr. BIRTWISTLE, in reply, said that if it were true that the number and sort were sufficient information for the weaver, there was clearly no meaning in the section at all. As regarded the second clause of the section Mr. Thompson had not attempted to prove that he had given the best information in his power, or that he had given any information at all. He concluded that if he proved to the magistrates' satisfaction, that any one of the particulars he had given had been omitted, he had proved his case.

The CHAIRMAN said the Bench were perfectly clear with regard to the meaning of the section—there was nothing ambiguous about it. It was passed to enable an operative to check what he was being paid, and to ascertain that the sort of cloth she was making was the sort it purported to be. That was the object of the Act, and under the circumstances they could do nothing but give Mr. Birtwistle his conviction. He expressed his private opinion that the masters and operatives might advantageously meet in conference to agree among themselves as to what particulars ought to be given. Meanwhile Mr. Birtwistle had to see that the Act was complied with, and as that had been made by Counsel into a test case, it was necessary to give a test decision, otherwise they would have thought it desirable to make no costs with the case. However, they felt compelled to impose the nominal penalty of 10s. and costs in each case.

THE balance-sheet of the Kollnau (Baden) Cotton Spinning and Weaving Co. for 1891 shews a profit of £6,300, and a dividend of 10 per cent., as against 12 per cent. for 1890, has been declared, £700 having, however, been appropriated from the reserve for this purpose. The reserve now stands at £22,800, and the share capital at £70,000.

ON the 1st inst. the Viceroy of India, Lord Lansdowne, visited Bombay, accompanying the Marchioness to that port on her departure for England. Opportunity was taken to review the East India Squadron and make a round of visits to public institutions, mills, and works, amongst which were the Technical School, the Manockjee Petit Mills, and the Sassoon Silk Mill, with all of which they expressed high satisfaction.

Technical Education.

CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION.

The following papers were set at the recent examinations in the subjects named. The papers on other textile subjects will appear in these columns from week to week until completed:—

COTTON SPINNING.

Instructions. The candidate must confine himself to one grade only, the Ordinary or Honours. The maximum number of marks obtainable is affixed to each question. Not more than *two* questions to be answered in either grade. *Three hours allowed for this paper.*

ORDINARY GRADE.

1. Is it advisable to mix any other growth of cotton with (1st) Bowed for 32's weft; (2nd) Orleans for 54's weft; (3rd) Texas for 30's warp twist? If so, give proportions and say where to be mixed. State the reasons for your answer. (15 marks.)
2. What is the usual arrangement to prevent the lap, when unfolding at the card, from being strained on the one hand, or not taken up fast enough on the other? (15.)
3. Name all the bands required in a mule, state their use, and say at what part of the movement of the carriage is the greatest strain on each. (20.)
4. In some Bolton mills an additional fly frame is introduced between the drawing and spinning processes. State the reason of this, and briefly describe its difference from ordinary fly frames, giving sketches where necessary. (20.)
5. Give full particulars of all fibrous and other matter in a handful of average American cotton, say middling Orleans. Refer to the appearance of each under a microscope. (25.)
6. What is the most striking difference between the traversing part of a twiner mule and that of a spinning mule? How is the drag on the yarn from the creel caused in a twiner? Explain by sketch how the single thread is prevented from drawing off the cop as the winding-on of the double yarn takes place. (30.)
7. If a cop is known to contain 960 yards, and there are 35 to one pound, what are the counts of the yarn? (20.)
8. What material is gassed cotton intended to imitate? Explain and give a sketch of the means whereby the cotton is prevented from burning, when the frame stops. (25.)
9. Yarn wrapping 36's is being spun from a double roving with 40 pinion, each roving being 8 hank; with what pinion can the same counts be spun from a 49 hank roving? (20.)
10. Describe from personal knowledge the influence of the weather on the processes of cotton spinning. (15.)
11. A certain lot of American bales consists principally of clean, short-stapled cotton of good colour and style. State which one of the following classes of goods it is least likely to be used for, and which one it is most suitable for:—32's cop twist, carpet yarns, 40 lb 40's bundle twist, ring warps, hosiery yarns, cask yarns, yarn for doubling or home trade weft. (15.)
12. To what extent is it customary for the spinner to see the cotton he buys in Liverpool, and in what manner is his purchase usually selected? (20.)
13. Name and shortly describe all the kinds of waste made in an Oldham cotton spinning mill, and say how produced. (25.)
14. Define the use of the weights, chains and levers found at intervals of a few yards in front of the carriage of a mule, and apparently suspended from the faller shaft, also the springs near the same. Can the effect of these be regulated in any way? Illustrate your answer by a sketch. (30.)
15. State the effect a good varnish should have on the rollers of a drawing frame, and the consequence if the varnishing is neglected or discontinued. (20.)
16. Define the position and office of the following parts of a ring frame:—Heart cam, traveller (two varieties), poker bar, ring rail, and buildler wheel. (15.)
17. While doffing a roving frame, what changes are made by the tenter in turning several times the wheel or handle below the frame? Sketch the arrangement, and explain the effect if neglected, and the frame re-started after doffing. (30.)
18. Would the carding engine card a greater weight of cotton or less, and would the sliver be heavier or lighter in each of the following cases:—
1st. If a smaller pulley were used on the barrow-wheel stud, this pulley being driven from the taker in.
2nd. If a smaller plate wheel were placed on the feed roller.
3rd. If the wheel between the doffer wheel and front shaft wheel were decreased in size.
4th. A smaller doffer bevel wheel. (30.)

HONOURS GRADE.

1. Explain fully and sketch what means are adopted in a slubbing frame to keep the train of wheels driving the bobbins in gear as the bobbin rail moves. What contrivance is adopted to lessen the strain on the wheels employed in raising the heavy rail and bobbins, and is this arrangement perfect for the purpose? (20 marks.)
2. When five hank rovings are made with 32 pinion and 56 back roller wheel, and a change is made to 40 pinion and 49 back roller wheel, what twist wheel will be required for the new hank if the five hank required a 20? What is the position of and work done by the twist wheel? (20.)
3. State briefly through what dealers' hands American cotton passes from the farm to the English spinning mill; to what charges, such as insurance, freight, discount, etc., it is subject, and their amount per cent. or per lb (30.)
4. Name and describe three ingredients, and the proportion of a cheap workable and suitable mixing for a common 20's grey bundle, or common 30's brown twist, with the approximate cost when mid-American is 6d, Fair Ceara, 6½; G. F. Egypt, 6¾; and G. Dholl, 5. (25.) (The candidate may take either mixing.)
5. Define exactly what is meant by the following particulars given with an order for bundle yarn, taking them in the same order as given:—10 lb nett, 40's, 36 lb test, grandrelle, 20 hank halshed 8, blue facing, backs, no type stamp, black press twine, full length; say how many heads of knots would shew at the end of the bundle. (25.)
6. Give a full description, with sketch, of a machine as used in Bolton for preparing the lap for the finisher card where a double carded yarn is made. (15.)
7. Describe minutely the action on a heavily loaded condensing engine of stopping the supply of water to the engine. (25.)
8. Describe the remedies for the following derangements in a carding engine:—(1) web hanging or bagging between calender and doffer, (2) flocks forming at the side of web in a roller card, (3) web following doffer instead of stripping clearly, (4) flat stripes leaving flats in continuous web, instead of being merely joined by few fibres. (30.)
9. When mules are fitted with the ordinary long coping rail and moveable front incline, if the cops made are faulty, as in the three cases named, describe the alterations required in the apparatus without filing. (1) Thinner at top of cop than at bottom and long cop nose. (2) Long chase during early draws. (3) Short stiff bottom causing running under and short chase. Illustrate your answer by sketches. (50.)
10. Taking either the Oldham, Bolton, or Blackburn standard wage list for spinners, as you may be most accustomed to, state the principle on which the list is framed, the standard wage from which variations are made, and the points that have to be taken into account in calculating an ordinary wage price. (30.)
11. The following points regulate the difference in value of various lots of American cotton on the same day:—Length of staple, strength of staple, freedom from foreign matter, glossy appearance, whiteness, gin-damage. Using the name usually employed in Liverpool to define each quality, place them in the order of their importance in determining values, and say which are taken into account in forming the L. M., M., G. M., etc., classification on the official list. (20.)
12. Give details of packing for transit, terms of payment, and the usual precautions to be observed in complying with orders in the following goods:—Bundles sold to China shippers, weft to Lancashire manufacturer, chain warps sold to Glasgow manufacturer, hosiery yarn sold to Nottingham manufacturer, and ball warps sold to Bradford through an agent. (30.)

also that whenever a pretext for mischief was wanted it could always be obtained in a couple of minutes by slightly tampering with the arrangements of the machinery. The operatives on their side contended that all the strike hands at Stalybridge ought to have been allowed to return to work and their substitutes to have been discharged. They have absolutely refused to sanction the agreement of their leaders, that a portion of them only should resume work and work alongside the non-unionist hands in the employ of the company. Up to the time of writing, therefore, so far as the Stalybridge strike, which was the origin of the lock-out, is concerned, the arrangement has been a complete fiasco. Employers will naturally require that the officials of the Operatives' Federation should exercise their authority and compel obedience to the terms of the settlement. Failing this, they will have proved themselves leaders who cannot lead, and in the future the employers will refuse to recognise or hold intercourse with them. What may be the early outcome of the situation we must wait for time to reveal. At a meeting of the negotiators of last week, held today, a great deal of irritation was expressed by the operatives' representatives at the refusal of the Stalybridge people to accept the arrangement, and that compulsion would be resorted to enforce its acceptance.

COTTON.—That cotton goes by "the rule of contrary" has been often demonstrated, and was once more illustrated when, after a rapid and considerable rise during the stoppage of many millions of spindles, it passed on the prospect of the resumption of work on Friday, and began to move in the opposite direction on Saturday in a more accentuated manner. Spots were practically 3/8d. lower, and futures, after some slight fluctuations, closed with a loss of 1/2 to 1 point. Brazilian was quiet, but for Egyptian there was a brisk demand owing to bad accounts of crop prospects. On Monday the market was quiet and moderately steady, with unchanged prices in American, Brazilian, and East Indian. In Egyptian adverse crop news stimulated the demand, which was large, and the official rates were advanced in fair to fully good fair qualities. Futures, after some fluctuations, advanced from 1/2 to 1 point. On Tuesday Liverpool anticipated an influx of buyers much greater than was realised, and was correspondingly disappointed. The market was quiet and prices irregular. Other growths were unchanged. Futures fluctuated within a small range, losing 1/2 a point on the day. On Wednesday the Washington Bureau's report came to hand and its contents were not reassuring to the "bulls" in the market. There was again only a small trade demand; prices eased off further and led to a reduction of 1/8d. in the official quotations of spots. Futures, after fluctuating with a downward tendency, closed the day with a loss of 2 1/2 points. Other growths were unchanged. Yesterday the market was again very quiet owing to rumours regarding a renewal of the trade dispute on a much more important basis than before. Futures, after several fluctuations, closed with a loss of 1 1/2 to 2 points on the day. Spot cottons of all growths were unchanged, except an advance of 1/8d. in fair Pernam.

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

	Import.	Forward.	Sales.	Stock.	Export.
American ..	33,161	44,111	32,390	1,477,050	3,413
Brazilian ..	—	896	1,290	50,890	—
Egyptian ..	4,709	8,163	7,320	108,910	875
West Indian	2,509	668	1,340	34,450	182
East Indian	3,422	2,318	2,570	39,530	1,366

Total .. 43,801 .. 56,156 44,910 1,710,830 .. 5,776

The following are the values of futures at mid-day on each day of the week—American deliveries—any port; bases of middling: low middling clause; (the fractions are in 64ths of a penny):—

PRICES OF FUTURES AT 1.30 P.M. EACH DAY.

	Satur-day.	Mon-day.	Tues-day.	Wednes-day.	Thurs-day.	Friday
May	3-50 61	3-60 61	3-62	3-57 38	3-58 50	3-55 56
May-June ..	3-60 61	3-60 61	3-62	3-57 38	3-58 50	3-55 56
June-July ..	3-63 8	3-63 40	4-0 1	3-60 6	3-62 8	3-57 58
July-Aug. ..	4-1 2	4-2 1	4-3 1	3-62 63	4-0 1	3-60 61
Aug.-Sept. ..	4-4 7	4-4 5	4-5 6	4-1 2	4-3 5	3-63 5
September ..	4-6 7	4-7 6	4-8 8	4-3 4	4-5 6	4-1 2
Sept.-Oct. ..	4-6 7	4-7 6	4-8 8	4-3 4	4-5 6	4-1 2
Oct.-Nov. ..	4-9 10	4-9 10	4-10 11	4-6 1	4-8 5	4-6 1
Nov.-Dec. ..	4-11 12	4-12 13	4-13 14	4-8 9	4-10 11	4-8 9
Dec.-Jan. ..	4-14 15	4-14 15	4-15 16	4-11 12	4-12 13	—
Jan.-Feb. ..	—	4-16 17	—	—	—	—

Price of Mid American.	4	4	4	3 15-16	3 15-16	3 15-16
Estimated Sales including Spec. and Export.	5,000 500	9,000 1,000	7,000 500	8,000 500	6,000 50	7,000 1,000

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

The state of matters in the cotton trade in its industrial aspects has undergone a considerable change since our last report. The negotiations which were then pending culminated in an agreement between the parties, which was, as we were enabled to announce last week, confirmed on Friday last by the Executive Councils of the contending associations. The terms of settlement, however, were very strongly and adversely criticised by both employers and operatives. The employers strongly contended that their representatives had done wrong in even giving a partial sanction to the principle of compensation for so-called bad work, as this, it was contended, would open the door to numerous claims whenever the cotton crop, as is not unfrequently the case, is somewhat inferior and wanting in strength of staple. This, it was alleged, made them responsible for nature's shortcomings. They alleged

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

	G.O.	L.M.	Md.	G.M.	M.F.
American	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Pernam	3 ¹¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Ceara	3 ¹¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Paraha	3 ¹¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Maranhm	4	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Egyptian	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
Ditto white	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¹ / ₁₆
M.G. Broach	—	—	—	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆
Dhollerah	2 ¹¹ / ₁₆	2 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆
Oomra	2 ¹¹ / ₁₆	2 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆
Bengal	—	—	2 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆
Tinnivelly	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	3 ¹¹ / ₁₆	—

* Nominal.

YARNS.—On Saturday the trade in yarns was slow all round, and prices generally in American sorts the turn easier. Only a very small enquiry was met with on home or shipping account, prices in the main being unchanged. On Monday there was no improvement for either home or export, and prices were easier. Manufacturers anticipating a rather longer run of the late dispute have transferred considerable stocks of yarns from the possession of spinners to themselves, nor, it is to be feared, much to their profit, and consequently are not under much necessity to buy further. Shippers are experiencing such a poor demand that they really had no occasion to buy. Prices steadily tended downward. On Tuesday there was only a small business in yarns, and that was done for immediate delivery. Forward selling, or in weight, was an impossibility at anything like current rates. Quotations were again reduced, and were decidedly lower from the top point of last week. On Wednesday home-trade yarns were again neglected, and sellers were almost everywhere willing to accept a reduction of 1/4d. per lb. on late rates, but even with this, business was difficult to obtain and small in amount. It is quite clear that yarns were not regarded as having found the level of their intrinsic value. Bolton yarns were steady, with a quiet trade passing. There was no change in the demand for yarns yesterday, and under the continued quietude prices again showed irregularity. Bolton yarns were steady in the main.

CLOTH.—The cloth market nearly all round continues depressed, owing to the exceedingly light demand on Indian account, which is not expected to revive until it is seen whether the coming monsoon rains are abundant or otherwise. Other sections are often affected when the Indian enquiry is slack, as buyers are well aware that with a weak demand from that source prices nearly always droop: a fact of which they endeavour to take advantage. On Monday the cloth section of the market showed no important change, the demand from the great Eastern centres of distribution being conspicuously small, and from most others of an indifferent and quiet character. Prices were the turn easier, and there was amongst producers a tendency to stop machinery. On Tuesday cloth buyers fell no increase of inducement to extend their operations, as neither from east, west, north, nor south was any improved demand discoverable. A small retail and scattered sort of trade was done on behalf of most markets, but the aggregate was considerably below the average of a principal market day, or the requirements of the looms at work. Not much change was made in quotations as manufacturers quite failed to advance cloth in proportion to yarns during the recent upward movement. On Wednesday there was no improvement in any direction but rather a tendency to greater quietude, as the relapse in cotton indicated possibly an early return to late quotations. In cloth there was, perhaps, a perceptible increase of the enquiry, and here and there a little more business was put through, mainly on the basis of a slight reduction from the quotations of last week.

To-day cotton is again quiet and easier. Yarn is in very small demand in buyers' favour. Cloth exhibits hardly any change, though a few parcels of standard makes have changed hands.

WOOLLENS AND WORSTEDS.

BRADFORD.—Spinners are not disposed to speculate, and as they for the most part have sufficient wool in stock, they keep out of the market. There is no improvement to report in regard to the yarn market. Export merchants receive few new orders from their customers abroad. Particulars are being freely supplied for contracts already made, and thus spinners are kept employed, but there is little disposition to concede the increased rates demanded. A fairly good business is being done in mohair and alpaca yarns, and the same might be said of the condition of the home market. As regards the piece trade, although there is a slight improvement in the home business, this branch is unsatisfactory, and prices are disappointing.

LEEDS.—Some extensive orders have been placed for the lower makes of tweeds, worsteds, serges, and other fabrics suitable for ready-made. There is every probability of an active run until Whitsuntide orders are completed, and from present indications they will be fully equal to those of last year. Buyers from the leading centres, especially London, Glasgow, and Edinburgh, are busy examining patterns of the latest designs in fancies, which are produced in almost endless variety, and holders of stocks are in expectation of booking large orders during the week. The hardening tendency in prices lately reported is fully maintained. Amongst shippers there is general activity, especially for certain makes adapted for Continental wear, and the American demand is again improving for specialities. In the mills orders, generally speaking, are more plentiful.

HUDDERSFIELD.—No large purchases from stock have been made. Trade generally continues to gradually improve, and most manufacturers are well employed upon orders, for though some who happened to produce patterns which have not caught the taste of buyers have many looms standing idle, others who have been more lucky are so pressed with orders as to be running their machinery overtime, in one or two cases night and day. There is a very fair business being done in the best goods with the United States, and the Continental trade is tolerably active, but somewhat restricted by the favour shown to Scotch goods, especially in Germany.

ROCHDALE.—Nearly all the merchants have placed their season orders. The manufacturers are very busy, owing to the merchants' travellers preparing to commence their rounds, on which they are expected to start not later than Whitsuntide. A few merchants who delayed their orders are now placing them, and trade may be described as in a healthy state.

GLASGOW.—Messrs. R. Ramsey and Co., wool brokers, in their report, dated 10th May, say:—*Wool:* There has been a better tone in the wool market this week. At the public sales there was a larger attendance, and altogether more animation than there has been for the last few sales. A fair quantity passed the hammer at late rates. Since the sales a moderate enquiry has been experienced, and some good American orders have been received. *Sheep-skins:* The supply has rather fallen off, and although most of the lots were of good sorts, from the various adverse influences of weather and markets, values are largely maintained.

FLAX AND JUTE.

DUNDEE, WEDNESDAY.—The Dundee jute trade does not improve. Notwithstanding the greatly diminished output of both yarns and cloth, prices continue to droop, and it is clear that there are still more goods in stock than are wanted at anything like present list prices. Jute, in spite of the figures, which show a greatly diminished import of the fibre, falls in price from day to day, and quite £2 a ton from the top quotations has been lost. Some holders indeed persuade themselves that the pinch for jute will come later on, and hold firmly, but generally there is now more disposition to meet buyers, rather than run the risk of being left with heavy stocks in face of new jute. Jute yarns are easier to buy, quite 3/4d. per lb. all round. For 8 lb. cop, 1s. 6 1/2d. is the price; for common warp, 1s. 8 1/2d. Extra qualities are a shade easier to buy, but the difference is still marked in the widely different value of common and fine. For common cop 1s. 6 1/2d. is the price; for the same weight of the best yarn 1s. 10d. is declined. Flax is firm, but buyers being well stocked are not disposed to pay any advance. Riga K is quoted at £17 10s. to £18 10s., according to shippers' reputation. Flax yarns of prime warp quality are firm. All other kinds of flax and tow yarns are a shade easier. Linens are in excellent demand for foreign orders, but the unfortunate trade disputes in England have sadly injured the home trade. The spring is cold and late, the Grampians are still covered with patches of snow. Shopkeepers complain of the season bitterly. The Fancy jute Dundee trade is very quiet, and orders are eagerly competed for. Arbroath Canvas is still difficult to sell. Dundee Hessians are being offered in quantity at very close on 2d. a yard; for 10 1/2oz. 4d. For wide goods of the best makes this price, it must be noted, gives no criterion. Jute, twines, and cords are still in excellent request. This trade extends.

HOSIERY AND LACE.

NOTTINGHAM.—Irish guipures have now fallen flat, chiefly owing to the diminution in the American demand. Common cotton laces are dull, although some of the finer kinds meet with enquiry. Silk Chantilly is slow. There is a middling enquiry for silk Chantilly and veil nets, and pretty good orders have been placed for silk Mechlin and Cambray nets. There is no new feature of importance in the plain cotton net trade. In the hosiery trade little or no improvement has occurred. Shipping orders are still small, and the home demand is not brisk. The

slightly better feeling in the wool market is causing a little more enquiry for woollen hosiery. Cotton goods are dull of sale at low rates.

LEICESTER.—Yarns are in fair request. Stocks are not large, owing to the activity of the trade. Spinners, however, complain of prices. Lambswool and cashmere yarns are in brisk request. There is also a healthier feeling in the hosiery branches.

Joint Stock and Financial News.

NEW COMPANIES.

VULCAN COTTON SPINNING AND MANUFACTURING CO., LIMITED, BURY.

Capital, £70,000 in £5 shares. Object, to carry into effect an agreement made between Wm. Malby of the one part and James Alex. Rogers, on behalf of this company, of the other part, to acquire mills, works, machinery, etc., and to carry on business as cotton spinners and doublers, linen manufacturers, wool combers, and merchants' manufacturers of dyeing and bleaching materials, etc. Subscribers:— Shares.

J. Parks, Bank House, Bury 50
J. Byrom, Woolfield, Bury 50
J. Barnes, 98, Rochdale-road, Bury 50
E. C. Roston, 2, Manchester-road, Heywood 50
I. H. Pickup, 114, Walmersley-road, Bury 20
T. Walsh, 161, Tottlington-road, Ellon, Bury 20
J. Metcalf, Black Bull Hotel, Bury 20
T. Skelton, 2, Calceator-street, Bury, Carder 10

The first directors are to be elected by the signatories to the memorandum of association. Qualification, 20 shares. Remuneration to be determined.

BEECH SPINNING CO., LIMITED, ROYTON.

Capital, £25,000 in £10 shares. Object to acquire and carry in the cotton mill situate on the easterly side of Thorpe Road, Royton, now forming one of the Downey mills. Subscribers:— Shares.

H. Cooper, 2, Radcliffe-st., Royton, spinner 1
J. Cooper, Holly Bank, Royton, spinner 1
R. Cooper, Holly Bank, Royton, spinner 1
J. W. Cooper, 12, Queen-st., Royton, spinner 1
J. Cooper, Downey House, Royton 1
Miss E. Cooper, Downey House, Royton 1
Miss S. Cooper, Downey House, Royton 1

The first directors are, Messrs. J. Cooper, jun., H. Cooper, J. Cooper, sen., R. Cooper, and J. W. Cooper; qualification, 10 shares; remuneration, £130 per annum.

F. B. LECKY AND CO., LTD., GLASGOW.

Capital, £50,000 in £10 shares. Offices at 5, West Regent-street, Glasgow. Object, to acquire and carry on the business of F. B. Lecky and Co., linen-cotton, jute, and linen merchants, carried on at Glasgow, London, Belfast, and Dundee. Subscribers:— Shares.

F. B. Lecky, linen merchant, Glasgow 1
R. Brown, linen merchant, Belfast 1
T. Jackson, linen merchant, London 1
T. H. Golding, commercial clerk, London 1
J. M. Cunningham, writer, Glasgow 1
J. Mann, C.A., Glasgow 1
W. H. Wood, linen merchants, Glasgow 1

The first directors are to be Messrs. F. B. Lecky, Robert Brown, Thomas Jackson, and W. H. Wood.

MATHER AND PLATT, LTD., SALFORD.

Capital, £200,000 in £10 shares. Object, to acquire as a going concern the business of steel and iron founders, mechanical and electrical engineers, and millwrights, now carried on by William Mather and John Platt at the Salford Ironworks, Salford, under the style of Mather and Platt, in accordance with an agreement expressed to be made between William Mather and John Platt of the one part and this company of the other part, and generally to carry on the business of mechanical, electrical, and hydraulic engineers, steel, brass, and iron founders, millwrights, etc. Subscribers:— Shares.

W. Mather, Salford Ironworks, Manchester 1
J. Platt, Salford Ironworks, Manchester 1
E. Hopkinson, Salford Ironworks, Manchester 1
C. Mather, Salford Ironworks, Manchester 1
T. Thorp, Salford Ironworks, Manchester 1
J. Milligan, Salford Ironworks, Manchester 1
A. W. Manson, Salford Ironworks, Manchester 1

Messrs. William Mather, John Platt, E. Hopkinson, and T. Thorp are to be managing directors of the company. Qualification: W. Mather and J. Platt, 1,000 shares; E. Hopkinson and T. Thorp, 250 shares. Remuneration, £4,000 per annum, divisible. Governing director, William Mather.

NELSON AND SHAW, LTD., HUDDERSFIELD.

Capital, £15,000 in £10 shares. Object, to acquire the undertaking of a worsted and woollen cloth manufacturer, now carried on by Nelson and Shaw at Priestroyd Mills, Huddersfield. The first directors are S. H.

Shaw and F. A. Shaw. Qualification, 10 shares. Remuneration: S. H. Shaw (as managing director), £300 per annum; ordinary directors' remuneration to be fixed.

Patents.

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(Late DUTTON & FULTON).

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SPECIFICATIONS PUBLISHED.

Each of the following Specifications may be purchased at the Sale Branch, 58, Curstons-street, London, for the price of 8d., or may be ordered on the Postal Request, price 8d., which is now on sale at all the principal Post Offices in the United Kingdom.

- 1891.
- 888 WEISS. Weaving.
6,735 DOUGLAS. Looms.
7,944 LEHMANN. Curled plush, etc.
9,483 HILL. Warp-lace machines.
9,911 MORT. Figured cloths.
9,943 IMRAY (*Färbwerke vorm. Meister, Lucius, and Brüning*). Blue colouring matters.
10,002 RATCLIFFE AND BEARD. Cotton lap machines.
10,252 BARNETT. Treating vegetable textiles.
10,285 BROOKS, S. H. and J. S. Reeling yarns.
10,619 JOHNSON (*Badische Anilin und Soda Fabrik*). Basic dye-stuffs.
10,747 SELWIG AND LANGE. Nitrating cotton, cellulose, etc.
10,556 CLARK (*Societe La Ramen*). Ungumming, etc., textile materials.
14,950 MACQUEEN. Combing cotton, etc.
1892.
2,668 GROSSMANN. Cutting cloth, etc.
2,718 PITT (*L. Cassella and Company*). Black dyes.
4,557 DE PASS (*Imbs*). Combing machines.
4,613 HARTLEY and others. Looms.
4,677 MONNER. Colouring matters.
4,707 ELSEY AND SULLY. Lace window curtains.
5,080 LAKE (*Dearborn*). Cotton gins.
5,135 SUTTON, T. A. and W. H. Bookbinders' cloth.

ABSTRACTS OF SPECIFICATIONS.

18,378. November 14, 1890. **Lace fabrics.** J. STRIEGER-MEYER, Herisau, Switzerland.

Ornamental lace or openwork fabrics are made upon an embroidery machine with a permanent ground of warp threads only, of warp and weft threads *a, b*, as shown, or of a net produced in a lace machine. In some cases a temporary ground *c* of a different class of material may also be employed, the ground being afterwards destroyed by the ordinary process.

18,379. November 14, 1890. **Compound fabrics.** J. STRIEGER-MEYER, Herisau, Switzerland.

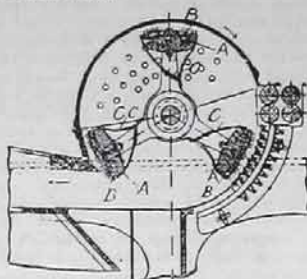
Relates to compound woven fabrics for dresses, borders of underclothes, antimacassars, table cloths, curtains, or parts of the same. Narrow selvage goods of dissimilar character, such as velvet or satin ribbons, or strips cut from wide goods, are united by openwork sewing, as shown in the figure, so as to produce a fabric of any required size, which may (in some cases) be finished off with a lace edging. The ribbons may first be placed face to face with a strip of strawboard between, the three thicknesses being then sewn through with a suitable thread, and the strawboard afterwards broken away to leave the fabrics connected. Raw edges of fabrics are turned in, in hem fashion, before sewing. In place of strawboard, filling pieces of slotted metal, etc., may be employed, the stitches, as they are formed, being drawn out through the slot. A sewing machine may be provided with a filling piece of this nature, a second piece co-operating therewith to hold the work. A stud in the second piece serves as a guide for the work.



18,600. November 18, 1890. **Spinning.** J. ROBINSHAW, 12, Hough-lane, G. SCHOFIELD, 7, Clegg's-terrace, Bilson Bridge, both of Kullview, Rochdale, and J. HEAP, Cliff House, near Rochdale.

Carding-Engines.—In order to prevent the fleece from "plucking" or flying outwards in flakes, a stationary or revolving rod or roller mounted in adjustable brackets is arranged between each worker and stripper. Instead of a rod a split tube may be used, in the slit of which is fitted a brush or a strap of felt, india-rubber, or other suitable material.

18,498. November 17, 1890. **Spinning.** A. KIRSCHNER, 9, Rue de Florence, Paris.



Cotton cleaners and openers.—The beater arms are provided with cross-pieces A, A which carry rails B, B furnished with rows of projections or teeth, the points of the leading rows of teeth being arranged further from the casing than succeeding rows. The arms are also provided with plates or blades C which act as fan blades and draw air through perforations in the casing and through the grid, this air current serving to transfer the cotton to the dust cages.

18,381. November 14, 1890. **Spinning.** W. TATHAM, Vulcan Works, Rochdale.

Roving and thread guides.—In order to equalise the pressure on all the slivers which are passing through the machine at one time, they are divided into two sets and traversed simultaneously towards and from the point at which the weight is applied. The traverse bars *e, e*, carrying the guides *e, e*, are respectively operated through segmental pieces *f, f* by a double-acting cam drum *f* driven by suitable gearing from the roller shaft.



18,441. November 15, 1890. **Knitting.** E. H. C. H. and E. H. WYNER, Mount-road, Leicester.

Seamless stockings, socks, and other articles, produced upon circular reversible machines, are made with a combination of broad and narrow ribs. For example, in making a combination of one and one with five and one ribs, one needle is placed in the cylinder and one in the ribbing dial, then five in the cylinder and one in the ribbing dial, and so on.

18,526. November 17, 1890. **Dyes.** J. IMRAY, 38, Southampton Buildings, Chancery-lane, London.—(*La Societe L. Durand Huguenin & Co., Basle*).

Gallocyanines.—Consists in condensing primary or secondary amines of the fatty series with gallocyanine whereby colouring matters, varying from violet to greenish blue, are obtained. For example, a mixture of equal weights of gallocyanine in powder and diethylamine in aqueous solution is first agitated at the ordinary temperature, and then heated to 90°–100° C. The product is dried and freed from excess of amine by distillation. It is very soluble in water, and dyes mordanted or non-mordanted wool blue tints than gallocyanine. Cotton mordanted with metallic mordants may be printed blue to greenish blue tints.

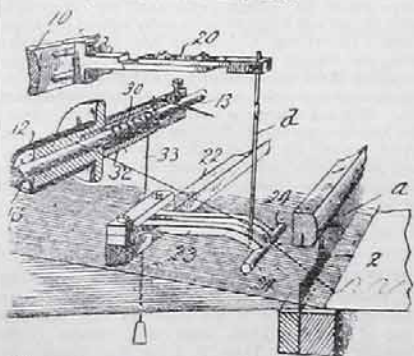
18,578. November 18, 1890. **Bobbins.** F. FOWKES, Tourbeck Mills, Windermer.

The loom or spool is formed of end discs connected by wires or rods of wood or other suitable material.

18,623. November 18, 1890. **Dyes.** H. H. LAKE, 45, Southampton Buildings, Middlesex.—(*Wirth & Co., Agents for A. Leonhardt & Co., Mulheim-on-the-Rhine*).

Relates to the process described in Specification No. 13,505, A.D. 1890. Consists in producing blue basic colouring matters by oxidising together dimethyl-*m*-amido-cresol and para-diamines, such as β -phenylene-diamine and β -amido-dimethylaniline, by means of chlorates, or peroxide of manganese, or sesquichloride of iron in acetic acid. The product is boiled with water, filtered, and precipitated by addition of common salt and chloride of zinc. A similar result is also effected by employing, as oxidising agents, amidoazo dye-stuffs, preferably such as yield para-diamines on reduction. These are heated with the amido-cresols in the presence of hydrochloric acid and glycerine to 140°–160° C. Consists also in heating in about molecular proportions, a salt of nitrosodimethyl-, or diethyl-amine, or quinine dichloride, and dimethyl-, or diethyl-*m*-amido-phenol with a suitable solvent such as spirit, glycerine, or nitrated. Similarly a salt of nitroso-dimethyl-, or diethyl-*m*-amido-phenol may be treated with an aromatic meta-diamine, such as *m*-toluylene-diamine, *m*-amido-dimethylaniline, or *m*-amido-diethyl-*c*-toluidine.

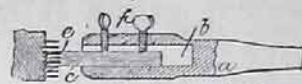
18,626. November 18, 1890. **Looms.** J. W. CHENEY, 43, Front-street, and P. A. BOWEN, 13, Springfield-street, both at Three Rivers, Palmer, Massachusetts, U.S.A.



Relates to arrangements for interweaving, with the usual warp and weft, a thread or series of threads in sinuous or zigzag form, such thread or threads appearing as distinctive marks. A needle *d*, supplied with thread from a bobbin *e*, is carried by an arm *g* on a frame *h*. This latter is rectangular and is moved up and down in head fashion by a cam-worked lever and weighted cords; it has also a lateral movement imparted to it by special

mechanism, which is controlled to produce varied effects by a staff can wheel and pattern mechanism in connection with the shuttle box motion. A bar *z* carries arms *z* with guard feet *z*, and moves laterally in consonance with the frame *h*, the feet *z* bearing on the warp to keep it taut. The reed *a* is cut out at *z* to admit of the lateral movement of the sinuous thread. The bobbin spool *l* rotates on a beam *l*, and slack is taken up by means of a spring *l*, barrel *l*, and weight cord *l*. A hand-hold and guard are provided on the lay-beam or reed-bar. The details may be modified, and in some cases two needle frames are employed, a short fixed guide reel section behind the needles being provided in lieu of the guide feet *z*, whilst a horizontal rod carried by the laycap prevents undue rising of the warp; the lay swords are in this case arranged to work against adjustable guiding members on the inner side of each frame standard of the loom.

18,634. November 18, 1890. (Date given under Sec. 103 of the PATENTS ACT, 1883, April 19, 1890.) **Spinning.** F. O. GROVES, Newton Lower Falls, Massachusetts, U.S.A.



A tool to be used for straightening the teeth of Garnet-toothed and other cylinders which are used in the burring of wool, etc. Within a socket *b*, provided with a suitable handle *a*, is fitted a number of blades *c*, separated by distance pieces *d*, and clamped together by thumb-screws *f*, etc. The tool is placed on a suitable cylinder, and the blades take between the rows of teeth on the cylinder, and the latter is rotated backwards.

18,662. November 18, 1890. **Spinning.** J. KEATS, Bagnall, near Stoke-upon-Trent.

Winding thread.—Improvements on the invention described in the Specification No. 518, A.D. 1887, in which the thread is wound on to "disc holders" or bobbins, each of which consists of a star-shaped disc of cardboard, etc., having an odd number of arms or rays which are bent alternately to one side and to the other of the plane of the disc. Details are described. *Drawings.*

18,665. November 18, 1890. **Rope-making machinery.** T. B. DODDLEY, 477, Highland Avenue, Malden, Mass., U.S.A.

The strands are made in flyer frames which have inner frames carrying the cord spools. The outer frames are driven by gearing, the inner ones by spur and worm gear. The finished strands pass through heads and round frames to drawing off heads. These contain two pairs of rolls round which the strands are rove which are driven by spur worm gear. The strands then pass to the rope laying head of ordinary construction. *Drawings.*

18,720. November 19, 1890. **Embroidery.** J. MATHIEU, 5, Rue Mazargan, Paris.

Ornamenting threads, applying, in chainstitch embroidery machines working single designs. Details are given for forming serpentine trimmings, for forming a cord, and for applying braid. *Drawings.*

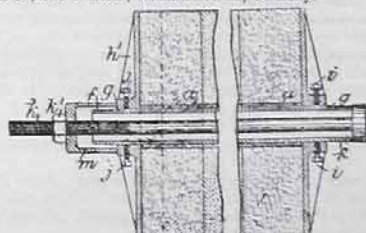
18,729. November 19, 1890. **Dyes.** B. WILLCOX, 47, Lincoln's Inn Fields, Middlesex.—(*Färbwerke vormals F. Dreyer & Co., Elberfeld*).

Relates to new series of oxanthraquinone. Consists in oxidising flavo-purpurin and anthrapurpurin into oxyflavo-purpurin and oxyanthrapurpurin by treatment with sulphuric acid and arsenic acid at 150°–160° C., pouring into water, filtering, boiling the raw product with aluminium sulphate, and re-precipitating by boiling with sulphuric or hydrochloric acid. The oxy compounds are then converted by treatment with fuming sulphuric acid, by the process described in Specification No. 8,275, A.D. 1890, into sulphuric ethers of new oxanthraquinones which are capable of dyeing mordanted fibres. The ethers are converted by heating them or their alkaline solutions with acids into new dye-stuffs of the alizarin Bordeaux series. Consists also in similarly converting anthranol first into an intermediate mordant dyeing sulphuric ether of a new oxanthraquinone, and then into a new Bordeaux product which yields a bluish red shade with alumina mordants and a violet with chromiun mordants. Consists, lastly, in directly oxidising anthraquinone to hexoxyanthraquinone by the action of sulphuric anhydride in a highly concentrated form, or preferably in the free state. In this case also an intermediate sulphuric ether is first obtained.

18,738. November 19, 1890. **Spinning.** W. TATHAM, Vulcan Works, Rochdale.

Spindles and their appendages.—In slubbing and roving frames, etc., the usual collar bearing is replaced by a long tube, which may rest upon the spindle wheel, and extends upwards within the bore of the bobbin, and nearly to the top of the same when the bobbin rail is in its lowest position. The tube takes freely into its holder and may be prevented from rotating with the spindle by being flattened. *Drawings.*

18,849. November 21, 1890. **Warping yarns.** B. COHNEN, Grevenbroich, Rhenish Prussia, Germany.



Relates to means for building up sectional warps, rings, or hollow cylinders *a*, upon which are first wound the requisite supplies of warp, *r*, threaded on a tube *f*, or a rod, beam or other axle, and are clamped between flanges *h* by means of a nut *k* and cap *m* working on a bolt *l*, or by other suitable means. The flanges are secured by set-screws *i, j*, etc., and the bolt *l* and cap *m* are afterwards removed. The rings *a* are provided with loops or lugs for the attachment of the warp ends, and with holes or depressions to receive the attachment knots. The rings are held in position by a key *g*, or by other means.

PATENTS.
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