The Textile Mercury.

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

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SHORT PLANTING IN COTTON.

The cotton growers are reported to be in trouble owing to the superabundance of their crops. We suspect this is a trouble that will be much easier to bear than a great deficiency. As an illustration, take for instance the grain famine in Russia and the sufferings this is inflicting upon the poor peasants. Suppose the cotton crop had failed in the American States as completely as the grain crop in Russia, what would have been the plight of the growers? We venture to say—a great deal worse than it is at present. Suppose that the present crop and that of last year had been each a million bales less than they have been, whilst the same outlay had been made upon them. Take it that the present decline will represent an average drop through the two seasons of 20 per cent.—it will certainly not be more—they have had a gain in the production of 25 per cent., which will have left them a handsome additional profit. Where then is the necessity for the Agricultural Commissioners of the Cotton States to have adopted a joint appeal to those concerned to reduce the cotton acreage by 20 per cent., as we learn from Memphis that they have just done? Of course this appeal corresponds to appeals made to spinners and manufacturers in Lancashire in times of pressure, but is quite destitute of the like justification. And we don't expect it will be any more successful; therefore the trade on this side need not run down to Liverpool to volunteer ½d. per lb. more for the raw material they may require. We hardly think the motives or facilities for combination amongst cotton growers exceed those to be found on this side, or that a more successful result will attend this appeal.

THE GROWTH OF PROTECTIONISM.

Protectionist sentiments during the past year or two have sprung up on every hand as if they had been subjected to the greatest forcing capacity of hot-house cultivation. And this, in fact, is, metaphorically speaking, what has really occurred. Continental statesmen, often animated by political hatreds and jealousies, have pandered to the latest sentiments of many of the producing classes, stimulated their selfish instincts, and created such a demand for protection as has led to the abrogation of commercial treaties on one hand, and retaliation on the other. France, which boasts itself the most enlightened nation of the world, but which, in this estimation, is simply blinded by its self-conceit, was the leader in Europe in this mischievous rôle, and has cancelled all its commercial treaty arrangements, and imposed higher and almost prohibitive duties against nearly all its neighbours, with the effect that it will soon be placed by its own act in a condition of commercial isolation. For the past 20 years its hand has been raised against every nation, and now it will soon find, if, indeed, it has not already done so, that every nation's hand has been raised against it. France is now almost surrounded by a ring of hostile commercial treaties from which it is excluded, and deservedly so; and with these and its own tariffs in operation, philosophic economists will soon have an interesting study placed before them. But, unfortunately, this is not the sole evil result that is springing from this source. In every Continental state the disturbance of the commercial *entente cordiale* has quickened into abnormal activity the selfish instincts of every interested class, who, in the natural and justifiable endeavour to safeguard their own interests, have not hesitated to snatch advantages that have been in advance of these, and to the detriment of the general welfare of their several communities. Intelligence from Italy states that strong opposition is being manifested all over the country to the new treaties of commerce. Before the text was known it was thought that the exportation of Italian wines for mixing purposes would be favoured, but this as well as other illusions as to the benefits to be derived from the treaties has passed away, and the agricultural classes are now convinced that their interests have been absolutely sacrificed to favour a few rich and influential manufacturers of North Italy. The home producers of cotton goods have exercised their considerable influence to obtain a more protectionist duty for their industries. A bill for a general tariff in this sense is now before Parliament, and will, according to all probability, be approved. English traders will feel most directly the effects of these protectionist measures. They will find an insurmountable barrier to their interests in the Italian weavers, who form a strongly organised body, exercising considerable political influence. To obtain their end they will not even be held back by the serious consequences which would arise from a rupture with Switzerland, negotiations with whom are now pending. The Cabinet is divided in its views with regard to the commercial policy. The Marquis di Rudini is trying to resist the overwhelming protectionist current, but such is the influence of Lombardy manufacturers in Parliament that although a commercial rupture with Switzerland must be considered as a national calamity, especially in the present state of Italian relations with France, still it is not impossible that it may take place. This is only a sample of the manner in which these sentiments have been stimulated. In other cases these examples have stimulated countries into a like course, even when their interests have not been directly compromised or affected. Our Australian Colonies afford illustrations of this kind. When industry and commerce get properly bound in their new shackles, it will become a subject of serious consideration as to whether some degree of force, in the shape of retaliation, cannot be judiciously applied to effect their removal. In the physical world man modifies the laws of nature, greatly to his benefit, and we don't see why he should abstain from the performance of a similar operation on natural political laws, especially when such influence would be exerted mainly in the way of bringing them nearer to the channel from which the force of others has diverted them.

THE CLASSIFICATION OF WOOLLENS AND WORSTEDS.

The classification of textile fabrics in every branch of the trade must often be a puzzle to the makers themselves, and still oftener to the officials who have to deal with them in our commercial bureaux and in foreign custom houses. With the latter we need not trouble ourselves, but some attention is due to our own Government offices. The officials of the Statistical Office in the London Custom House complain that in the compilation of the statistics relating to the export trade in woollen goods of British manufacture, much confusion and unnecessary correspondence have been caused owing to the frequent failure of manufacturers, merchants, exporters, and shipping agents to describe their goods according to the headings of the official export list. The classification contained in that list was adopted after consultation with the Chambers of Commerce of those towns interested in the trade in woollens; and the statistics of our foreign trade in this important branch of British industry cannot be compiled unless manufacturers and exporters carefully observe the distinctions therein laid down by classifying (in their advices to their shipping agents) their consignments of woollens and worsteds intended for foreign markets, under the headings which have been adopted. The principal source of error has been a certain amount of confusion in such advices between goods which can properly be described respectively as woollens and as worsteds. Articles which are in reality "worsteds" are commonly described as "woollens," and (but less often) woollen goods are given as "worsteds." In other cases articles are described by trade names not to be found in the official list, such as "estramines," "serges," "beiges," "llama cloth," "cashmeres," etc., with the result that the clerks to shipping agents, ignorant of the proper heading under which such goods should fall, describe them in the Customs specification in a haphazard

manner, and without any regard to their real nature, thereby materially impairing the value of the returns. The Government plan of arranging the statistics is based upon the information contained in the Customs specifications. An appeal is therefore made to all those who are interested in securing correct figures as to this great branch of British trade to assist the efforts of the departments whose duty it is to compile the trade returns, by observing carefully the distinctions of the official export list in all advices intended for the use of shipping agents in making out their Customs specifications. Copies of that portion of the export list which relates to woollen and worsted manufactures have been forwarded to the various Chambers of Commerce in the manufacturing districts affected. Particular care has been taken in this reprint to make clear the distinctions to which attention has been drawn, and the officials request that secretaries will distribute them amongst the members of their Chambers and impress upon them the necessity of instructing persons in their employment and their shipping agents to comply strictly with the requirements of the law in entering their goods for exportation. If it be desirable to keep correct accounts of the commercial operations of the country,—which few will deny,—some little effort should be made to comply with these requests. The classifications having been drawn up, or at least approved, by experts, cannot surely present any insuperable obstacle to compliance, though trouble may be entailed.

The Board of Trade Returns for December.

The Board of Trade Returns for December, 1891, are similar in character to those of November, inasmuch as they record a considerable increase in the value of the imports, and a decrease in the value of the exports. There is a further similarity on account of the total of the imports being swollen through the large arrivals and higher prices of cereals and the excessive receipts of raw cotton. The total imports amounted to £43,261,980, an increase of £3,827,532, or 9·7 per cent.; and the exports to £19,839,815, a decrease of £1,544,455, or 7·2 per cent. Of the increase in the imports £2,133,193 is due to raw cotton, and £119,487 to jute. On the other hand, sheep's wool is less in value by £435,236, and indigo by £222,706. These articles are those in which the differences are most apparent. The receipts of raw cotton from the United States reached the total of 2,896,190 cwt., while from Egypt 385,954 cwt. arrived, which compare with 1,963,650 cwt. and 273,654 cwt. respectively. Brazil and the British East Indies have each sent less cotton. The quantity of raw cotton retained for use here (which is arrived at by deducting the total exports from the total receipts) was for the past year 16,186,341 cwt., which compares with 14,094,905 cwt. in the previous year, and, as the exports of cotton yarn and piece goods are below those of 1890, the inference is that the home trade has taken arger quantities of the finished article. The same may be said of sheep's wool, for, whereas our requirements reached a total of 290,000,000 lb. in 1890, last year the total was 331,000,000 lb. As regards the exports, every class of articles, except apparel, is lower in value than in the corresponding month of last year. Cotton yarn and piece goods were each sent away in smaller quantities, and in each instance the decrease is spread over all countries. The exports of woollens and worsteds shew a better condition of trade, as there is a rise in price and a better demand. Of woollen tissues, France, the United States, and Australasia have each taken more. Of worsted tissues, the exports of which to the United States the McKinley Tariff Act was expected to kill, it is noticeable that, while in December, 1890, the exports thither were 2,115,000 yards, last month they reached the total of 3,013,000 yards. Australasia also took more. As regards apparel, it is Australasia whose demands are so much greater. The total imports for the year are valued at £435,691,279, an increase of £14,805,584, or 3·5 per cent. Much of this increase is due to the increased prices of cereals. The exports for the year are stated to be of the value of £247,272,273, a decrease of £16,258,312, or 6·1 per cent. Below we give particulars of the imports and exports of textiles, etc., for the year and for December:—

Imports of Foreign and Colonial Merchandise in 1890 and 1891.

Principal Articles.		Quantities. 1890.	1891.
Cotton, raw	Cwt.	2,354,213	3,333,367
Flax	,,	167,528	152,268
Hemp	,,	198,020	203,003
Jute	Tons	30,648	32,101
Silk, raw	Lb.	187,898	128,361
Wool, sheep and lambs'	,,	52,265,151	44,060,954
Woollen stuffs	Yds.	4,683,810	5,206,417

I.—Imports of Foreign and Colonial Merchandise for December.

Principal Articles.	Value. 1890. £	1891. £	Increase or Decrease per cent. compared with Dec., 1890. Quantity.	Value.
Cotton, raw	6,384,108	8,517,301	*41·6	*33·4
,, manufactures	176,399	208,392	—	*18·1
Flax	277,752	281,479	*5·5	*1·3
Hemp	343,404	277,430	†5·0	†19·2
Jute	377,696	497,383	*4·7	*31·6
Silk, raw	134,029	86,103	†32·6	†35·7
Wool, sheep, and lambs'	2,103,249	1,668,013	†15·7	†20·7
Woollen stuffs	405,409	443,201	*11·2	*9·3

*Increase. †Decrease.

II.—Exports of British and Irish Produce and Manufacture for December.

Principal articles.		Quantities. 1890.	1891.
Cotton Yarn and Twist	Lb.	21,237,800	18,532,500
,, Piece Goods	Yards	455,395,800	420,911,400
Jute Yarn	Lb.	3,103,300	2,795,800
,, Piece Goods	Yards	24,217,500	24,658,400
Linen Yarn	Lb.	1,122,900	1,152,800
,, Piece Goods	Yards	13,944,000	14,715,300
Wool, sheep and lambs'	Lb.	884,600	1,101,400
Woollen and Worsted Yarn	,,	2,950,000	3,287,700
,, Tissues, heavy and light, broad and narrow	Yards	5,029,000	4,718,800
Worsted Tissues, heavy and light, broad and narrow	,,	11,834,500	11,950,500
Woollen Carpets	,,	729,800	816,800
,, Flannels	,,	1,036,500	1,531,300
,, Blankets	Pairs	160,530	192,877

Principal Articles.	Value. 1890. £	1891. £	Increase or Decrease per cent. compared with Dec., 1890. Quantity.	Value.
Cotton Yarn and Twist	1,070,133	836,198	†2·7	†18·8
,, Piece Goods	4,920,400	4,453,692	†7·5	†9·5
,, Other Manufactures	656,914	713,261	—	*8·5
Haberdashery	146,384	158,482	—	*8·2
Jute Yarn	32,398	29,912	†11·6	†7·6
,, Piece Goods	229,584	233,659	*1·9	*1·8
Linen Yarn	68,577	68,353	*2·6	†0·3
,, Piece Goods	334,906	335,354	*5·5	*0·1
Machinery and Millwork	1,349,037	1,237,729	—	†8·2
Silk Manufactures	151,894	147,183	—	†3·1
Wool, sheep and lambs'	38,191	43,090	*24·5	*22·4
Woollen and Worsted Yarn	293,286	309,019	*11·4	*5·3
Woollen Tissues, heavy, light, narrow, broad	484,008	472,180	†6·1	†2·4
Worsted Tissues, heavy, light, narrow, broad	689,936	746,269	*0·9	*8·2
Woollen Carpets	73,226	75,341	*13·0	*2·8
,, Flannels	58,525	53,037	†3·4	†8·0
,, Blankets	61,846	75,361	*20·2	*21·8

*Increase. †Decrease.

Academic Scorn of those that Toil and Spin.

The Rev. T. Mozley, well known to some of our readers as the author of a charming series of reminiscences, and as one of the young men associated with Newman at Oxford, may be an interesting historian and an able theologian, but there are evidenly spheres of English life about which he is so utterly ignorant that it is not safe for him even to refer to them. He may know something about Penelope and her loom, but his practical appreciation of those who tend looms in his own country at the present time seems to be of the slightest. Otherwise he could not have written the following startling passage:—"It is the greatest drawback of human progress and of grand operations that they dwarf humanity and reduce men to cogs in a wheel, or links in a chain. We cannot but pity the being that spends the best years of his life in watching the threads in a spinning mill or on a power loom. The intellectual diminution of the unhappy drudge is proved by the readiness with which he listens to advisers who only succeed in making the individual less than nothing in the warfare between labour and capital." It is amazing that these words could have been penned by a man of high culture and ability towards the close of the nineteenth century! Are "unhappy drudges" confined to the manufacturing towns of Lancashire and Yorkshire? Are they never to be seen among the agricultural labourers, with whom Mr. Mozley is perhaps more familiar than with the class on which he looks down with such infinite contempt? Are not many beside textile operatives accessible to the agitators so justly censured? Moreover, is it not a fact that among these "beings"—whom our reverend monitor seems to consider scarcely worthy of the name of man—are some with whom it would be an honour for him to associate? If one of Mr. Mozley's greatest predecessors in the English Church, the saintly George Herbert—the sweet poet who declared even the sweeping of a floor to be a beautiful work if done from right motives—had been by when Mr. Mozley was penning the strange sentences we have quoted, would he not have gently hinted that the ranks of those engaged in "watching threads" have produced men as noble intellectually and morally as the noblest specimens reared in academic quiet on the banks of the Isis or the Cam?

The Storage of Cotton in Liverpool.

The plethora of cotton coming into Liverpool is putting the Mersey Docks and Harbour Board into a difficulty as to how they are to find proper accommodation for it. Quite recently a great extension in this respect was made, but already it is filled up, or nearly so. In December the arrivals were simply enormous, and there is every prospect of their continuing on a scale not very materially reduced for some few weeks to come. How would it be in order to ease the difficulty of the time if a few hundred thousand bales were despatched to the railway companies' stations in the spinning centres for warehousing until the pressure is reduced? Sometimes an extra $\frac{1}{32}$d. or $\frac{1}{16}$d. could be obtained for the facility of instant delivery in cases of urgency. Such things are not unknown in the yarn trade.

A Curious Use for Silk.

Silk, the *crême de la crême* of textile materials, has been put to strange uses in its long history. Sometimes these have had a very adverse influence upon its popularity as an article of wear. Our elder readers will remember that about 40 years ago, Mrs. Manning, a London murderess, having been convicted and sentenced to death, elected to be hanged in a satin dress, the consequence of which was that satin as an article of wear amongst ladies went out of fashion for more than thirty years. Indeed it is not long since that it has come to be again regarded as admissible. In Turkey silk has been utilised by the Turks, almost ever since their advent into Europe, as an instrument for the punishment of great criminals, or of high-placed officials who fell under the displeasure of the Sultans: they were strangled with silk cords. A curious relic of this practice survives in the Municipal Museum of Vienna to the present day. Two hundred years ago, the Turkish power was neither dying nor sick, but in the estimation of neighbouring nations was excessively alive. In 1683, the Ottoman

army, under the command of Kara Mustapha, Grand Vizier, laid siege to Vienna and maintained it for three months, when relief was brought by John Sobieski, the celebrated King of Poland, who defeated the Turks with great slaughter. The Grand Vizier, consequently, incurred the displeasure of his Imperial Master, who appears forthwith to have ordered him to be strangled, which was done with a red silk cord. This cord and the unfortunate Grand Vizier's skull are preserved to this day in the City Museum. It was a long time before the Viennese lost their terror of the Ottoman hosts, as fifty years afterwards they erected walls around their city and surrounded them with a moat, both of which they are just engaged in removing.

The Oldham Chamber of Commerce.

At the recent meeting of the Oldham Chamber of Commerce it was resolved that circulars be sent to the spinners in the district recommending them to buy all cotton under the new bill of lading, which makes the captains of the vessels responsible for the number of bales they may ship. It was also decided that the Chamber bring before the next year's conference of Chambers of Commerce the question of the laws relating to the rating of machinery. The Law Committee of the Chamber, which had considered the subject, gave it as their opinion that the latter portion of Clause 1, which read; "And any machinery which does not require any special foundation or special adaptation of the hereditament in connection with the use of the particular machine shall be excluded, providing that such machinery shall not be used for producing first motive power"—should be altered to "And any machine or machines which are not used for producing first motive power shall be excluded." These are both matters of considerable interest to the trade, and should receive the support of the Oldham people interested who may not have joined the Chamber.

Lady Dilke on Women's Labour.

Lady Dilke visited Oldham on Tuesday in connection with the organisation of female workers, and in the evening addressed a meeting in the Co-operative Hall, King-street. In the course of her remarks she said the question of women's labour was a big question now. It was cropping up everywhere, and was occupying attention in every part of the world. She thought it was of the highest importance that the women should organise themselves, and occupy themselves in seeing how they could redress the wrongs of women engaged in industry; and until they did that they would never see a proper redress of the wrongs of the men, which were very deep and deadly. They were wrongs which were eating out the heart and strength of the nation. There was a desire for organisation amongst women, not only in this country, but abroad as well. Wherever they went they found the same difficulties present through this terrible underselling of the men by the women. It was not a matter which could be met by legislation. The difficulty, she said, was only to be coped with by the women and girls organising to protect themselves, with the assistance of the men. We regret to differ entirely from Lady Dilke on this matter, and to be compelled by our conviction to say she knows very little about the subject of women's labour, especially as it relates to Lancashire. As applied to Lancashire, such statements are simply claptrap. In the textile industries, and particularly in the cotton trade, women do not undersell men. Since the foundation of the textile industry in this and the neighbouring counties, it has been the common practice for men and women, boys and girls, to work side by side on equal terms, with equal pay for work performed. If Lady Dilke wants to be of real service to her sex engaged in labour, let her advocate the acquisition of a higher degree of technical knowledge and skill amongst the costume and dress makers who have been accustomed to work for the middle and upper classes, so that they may be able to make a costume, mantle, jacket, or dress, in such a manner that it will be a reasonable fit without having to be altered half-a-dozen times. Owing to the want of this knowledge and ability, women workers have almost lost all this, the best-paying portion of the trade, which is all falling into masculine hands, as all those who profess to dress with any regard to style must have tailor-made costumes. This is a case in which the aggressiveness of the men has captured a field of labour that ought to have been peculiarly working-women's own. And perhaps even Lady Dilke has assisted the men to win this victory over her "sisters."

Yarn Contracts.

The question of the difficulty or inability of enforcing the yarn contracts made at considerably higher prices than those ruling to-day is again coming to the front at the spinning companies' meetings in Oldham. At one of these gatherings on Saturday the Chairman stated that they had a million weight of yarn on order, against nearly the whole of which cotton had been purchased, and yet it was with the greatest difficulty they were able to get the customers to accept consignments. He also intimated that the company had two solicitors at work in connection with the matter, sending out writs, obtaining the settlement of differences, and so forth. This condition of affairs is said to be pretty general amongst the Oldham spinning companies, in connection with which lawyers are at work doing what they can to bring relief. Owing to this state of things the directors allege that they are unable to avoid losses, although when the cotton was purchased to cover orders they had a profit, and would be able now to steer clear of losses if their customers would be above-board in their transactions with them. At one of the meetings a shareholder remarked that the yarn purchasers had been speculating with them, while a director characterised the system of yarn selling and buying as "entirely rotten." Whether that is so or not, it is evident the Oldham limiteds have been badly cornered in both their buying and selling. At another company's meeting the Chairman said that a short time ago the spinners were also sinners in respect to running off the terms of their contract, and that, now the boot was on the other leg, manufacturers were taking advantage of it, and spinners were down and being trodden on right and left. Here we have the two positions, that of the manufacturer on the one hand and the spinner on the other, each of which, according to the chairman in question, is equally guilty of telling "fibs" to escape the fulfilment of yarn contracts when it is to his advantage to do so. Still, all the same, persons can better stand the brunt of their own actions than the shortcomings of other people. Of course the present difficulty is due to the serious fall which has taken place in the value of cotton, and consequently in the prices of yarn. Manufacturers, in defence, urge that when prices advance the spinner tries to score a similar advantage over him, and that it is with the utmost difficulty he can obtain delivery. There may be a great deal of truth in this statement, and no doubt there is, but the manufacturer, it should be stated, under such circumstances is not slow to inform the spinner that unless he delivers him yarn, he will purchase against him. And he does not wait long either, it is said, before he puts his threat into execution. The spinner just now thinks himself about the most abused individual under the sun. Even if this is so, he is responsible for much of the treatment. If he allows himself to be made a cat's-paw of that is his own look out, and it would appear, according to his own statement, that he gets more than his share in this respect. It is apparent, however, that the practices surrounding the yarn trade require putting on a more equitable footing, and a conference of producer and user on the subject might do something towards lessening much, if not entirely to do away with, the friction which now exists in the yarn selling business, and at the same time, probably, result in the framing of a contract note which would give protection to the producer and consumer.

Registration of Holidays under the New Factory Act.

From enquiries made amongst occupiers of factories relative to the registration of holidays under the new Act, we find that its requirements are not understood as clearly as they should be. Many employers are under the impression that all holidays must be notified to the Inspector, and a copy of the notification posted in the works. This is not the case, and employers would do well to note that *only six days* in the year are compulsory holidays, including Good Friday or Easter Monday and Christmas Day. Taking for granted that Good Friday and Christmas Day are allowed for holidays, there only remain four holidays more to meet the requirement of the Act. Two of these must be between March 15th and October 1st, and two in the remaining period. It will thus be seen that no change is made except to register the compulsory holidays—which are, as a rule, settled and well known in each locality.

THE INTOLERANCE OF TRADES-UNIONISTS.

It will not have escaped the notice of our readers, or of the general public, that there is a wide-spread movement amongst all sections of trades-unionists in this country, not only to boycott, but to persecute all those working people who do not think as they themselves do on the subject of trades-unionism. Dockers, sailors, colliers, ironworkers, and cotton operatives, have all adopted these views, and endorsed the propriety of carrying them into effect. They have come to the conclusion that they will not work alongside non-unionists, either on shipboard or when discharging vessels; in coal mines, or even when descending them; in the machine shop, or by the spinning mule. This course has been adopted because they say that the non-unionists reap advantages from their efforts without contributing to obtain them. This allegation may or may not be true; its correctness could be disputed, but this is not the point to which we would direct attention. Something much more powerful could be urged against the action of the trades-unionists upon moral grounds, but after what has been seen during the past five years it would be futile to expect much attention would be given to an ethical argument. It may be more to the purpose to consider the legal aspects of the matter.

Trades-unionists have been encouraged to adopt their present resolutions by the result of a prosecution springing out of a strike at Plymouth in the early part of last year, which was tried before Mr. Bompas, Q.C., Recorder of that town, and which was based upon an attempt to procure the discharge of some workpeople who did not belong to the union. The prisoner, who was the secretary of the union, we believe, was charged with conspiracy, and

was convicted by the Recorder and sentenced to a term of imprisonment. An appeal was lodged and the decision of the Recorder upset, and it was laid down that unionists had a legal right to combine and refuse to work with people who did not think as they thought upon this matter, or were otherwise objectionable to them. It is upon this decision that unionists base their action, and claim that their proceedings do not contravene the laws. We believe, and very strongly so, that the decision of the judges was an erroneous one, and that had the case been carried to a still higher court it would have been upset. It is with us a standing conviction that our laws are very much better than their administration, and that nothing more urgently demands reformation in this country than the administration of justice. It seems incontestable that the proceedings we have indicated contravene the common law, if not the statute laws, of the realm upon the subject of conspiracy, and that a test case tried in a high court would soon establish this contention. The principle of the common law regarding individual liberty was clearly and ably stated in a celebrated case by Lord Bramwell as follows:—

> There is no right in this country under our laws so sacred as the right of personal liberty. But that liberty was not liberty of the body only; it was liberty of the mind and will. That liberty of a man's mind and will to say how he should bestow himself, his means, his talents, and his industry was as much the subject of the law's protection as was that of his body.

It is clear from this that the State guarantees to every individual a freedom of thought and action that permits him to come to his own conclusions as to whether trades-unionism would be beneficial to him or not, and to carry his conviction into effect by joining or abstaining from joining such organisations. This being the case any act that directly or indirectly contravenes this right is an infraction of the common law, and would be punishable when the law is set in operation against offenders. The above statement is a strong affirmation of individual right. The following statement by Lord Justice Bowen defines what constitutes an attack upon such rights:—

> Of the general proposition that certain kinds of conduct not criminal in any one individual may become criminal if done by combination among several there can be no doubt. The distinction is based on sound reason, *for a combination may make oppressive or dangerous that which, if it proceeded only from a single person, would be otherwise.* In the application of this undoubted principle, it is necessary to be very careful not to press the doctrine of illegal conspiracy beyond that which is necessary for the protection of individuals or the public.

Surely when the liberty to work, to dispose of one's labour as one may think fit, is attacked, as it is being, and is threatened to be more extensively, in the manner we have described, and in other well-known ways that have come under the notice of our readers, it is impossible to resist the conclusion that the trades-unionists are stepping beyond the limits of legality in their tyrannical procedure against their fellow-workers who do not concur in their views. The principle of this law is a natural and necessary outcome of the civilisation which has induced people to dwell together in communities, and is required to protect the liberty of the individual from combined coercion and oppression. That this view is accordant with the law is proved by the statements of the judges in the report of the Trades-Union Commission, of which Sir Alexander Cockburn, Mr. Justice Smith, and Mr. Russell Gurney were members. The report says:—

> The party assailed may be able . . . to defend himself against the attacks of one. It becomes a very different thing when he has to defend himself *against many combined to do him injury.* . . . The law has therefore, and it seems to us wisely and justly, established that a *combination of persons to commit a wrongful act with a view to injure another shall be an offence, although the act, if done by one, would amount to no more than a civil injury.*

We know that it may be speciously contended that trades-unionists only combine to do rightful acts; but acts which injure others, whether from a direct blow from one person to another or through the intervention of a third person, are not the less illegal because so delivered.

It must be apparent, from the views quoted above, that there is good ground for the affirmation we have made, that in the common law of the country, if properly tested, will be found a remedy for the threatened tyranny of the trades-unionist leaders, and that when the arrogant demands they have apparently decided to put forward are made, no time should be lost in appealing to the protection of the law, and once for all securing a satisfactory expression, if necessary, from the highest court in the Kingdom. It is quite unendurable that the liberties of individuals, and through them those of the entire public, should be trampled under foot in the manner we have recently seen, and which is threatened to be done on a much more extensive scale in the early future.

Bleaching, Dyeing, Printing, etc.

DYEING AND FINISHING UMBRELLA CLOTHS.

The production of umbrella cloths is in the hands of very few persons. Not many dyers and finishers have much to do with them, and many do not care to touch them, as their production offers many difficulties. Some of these are due to the fact that many umbrella cloths are combinations of cotton, wool, and silk, all in one piece, and it can be readily understood that to dye such a fabric an even shade is one of some difficulty, owing to the great differences there are in the affinities of the various fibres for the dye-stuffs. One very troublesome kind of cloth is that containing a silk border, and often the trouble is increased by manufacturers using raw or half-boiled instead of full-boiled silk, and the consequence is that after being dyed and finished such silk borders look meagre and dull.

Half-woollen goods with silk borders require some care; if dyed in the rope form only so much material should be placed in the bath that it lies loosely and can be handled easily; too much handling of the borders must be avoided.

By the use of the direct-dyeing cotton colours the dyeing of this class of cloths in fancy colours has been rendered much easier, but it still remains difficult to dye a good black on such mixed goods. In some works it is customary to dye the cotton warp in the yarn either black or brown or blue, according as it is going to be put into black, brown, or blue cloths. A very good *black* can be dyed on half-woollen cloths with silk borders by the following process, which is adapted for four pieces: Prepare a bath with 2 lb. bluestone and 1 pint of acetate of lime at 50° Tw., working at 150° F.; give 9 ends on the jigger, and then boil with 10 oz. bichromate of potash for half an hour, and dye to shade in 15 lb. logwood, with ½ lb. bisulphate of soda, working at the boil. Should the cotton warp not come up properly, run it through the jigger cold, with a little logwood and iron.

Dark Blue for four pieces with black warp, silk border: Mordant with 10 oz. bichromate of potash and 5 oz. tartar. Dye at the boil for three-quarters of an hour; and with 14 lb. logwood, rinse a top with 5 lb. Glauber's salt, ½ lb. sulphuric acid, 1 lb. indigo extract, and a little methyl violet 5B, and aniline blue. This will take an hour; should it be necessary the colour of the warp can be brought up by passing in a cold bath of sumac and iron.

A *Dark Brown* can be dyed in the bath of 2 lb. bluestone, ½ lb. alum, ½ oz. fast red, 1½ lb. indigo extract, 4 lb. logwood, and 1 oz. maroon, working at the boil for 1½ hours.

These goods are finished by being cleaned, crabbed and singed. The latter is done before dyeing; it is advisable to have the silk border damp when passing over the singeing plate, so that the silk shall not be too much affected by the heat. After singeing, of course, the cloths are washed.

Cotton umbrella cloths, whether they have silk borders or not, are usually cleaned and singed. For browns they are treated to a bath of sumac, then passed through iron liquor, and dyed with maroon and Bismarck brown. Blacks on cotton are mostly got with aniline black, which process of dyeing must be well known to dyers.

Other colours are best obtained with the benzidine dyes.

ALIZARINE BLACK IN DYEING AND CALICO PRINTING.

Naphthazarine has been known since 1861, but until lately it had not come into use as a dye-stuff, inasmuch as the results obtained by it were anything but satisfactory, the shades wanting in solidity and evenness, which faults were due undoubtedly to the fact that the dye-stuff is insoluble in water. The combinations with alumina, iron, and tin, are not very good or fast, but the colour lake formed with chrome is characterised by great fastness to air, light, acids, and washing.

By treating naphthazarine with the alkali sulphites—either the neutral or acid salts will answer—it is converted from a product quite insoluble in water, and therefore not in good condition for dyeing, into a product which is easily soluble in water, and which, therefore, is in the best possible condition for dyeing or printing. This product is sold under the name of alizarine black.

Alizarine black has the following properties: It is a black paste, soluble in water, the solution having a brown colour with a blue-green fluoresence. On addition of either hydrochloric acid or sulphuric acid, and on boiling, the naphthazarine separates out in an insoluble form. On treating the solution with soda, it passes through a green to an intense blue, and from this solution the naphthazarine is thrown down by the addition of acids. On mixing the soluble naphthazarine in the cold (the commercial alizarine black) with metallic mordants, the colour lake is not precipitated out in an insoluble form; if this mixture be printed on cotton, and it be treated in the usual way, the colour lake is formed with the greatest ease, and good fast colours are the result.

Alizarine black can be used in dyeing wool or silk with a chrome mordant. For wool dyeing, the material is first mordanted in the usual way with potassium bichromate and oxalic or sulphuric acid, or perhaps the new chromium fluoride can be used for this purpose.

After the mordanting, the wool is rinsed in water and dyed in a new bath containing the required quantity of dye-stuff with a little acetic acid. The materials are entered in the cold, and worked for half-an-hour so as to get the goods thoroughly impregnated with the dye-stuff; then the bath is slowly raised to the boil, taking at least one hour for this purpose, and turning the goods all the time. The boiling is kept up for 1½ hours, which helps to fix the colour thoroughly on the fibre; after this time, the goods are taken out of the bath and washed.

The shades obtained vary from a grey to a deep black, according to the quantity of dye-stuff which is used: with 2% a good useful grey is obtained, while with 15% a good fast black results. The colours so obtained, whether light or dark, are characterised by being fast to acids, washing, light, and air, and are very solid in appearance. Alizarine black is one of the fastest colouring matters at the disposal of the dyer.

In silk dyeing, alizarine black may be used to produce some very fast blacks. The best mordant is acetate of chrome, which is used at about 20° Tw.; the silk is boiled in it for about two hours, and is then dyed in the same manner as wool. With care very satisfactory results can be obtained.

For cotton dyeing, alizarine black is not so applicable, owing to the difficulty of mordanting the fibre with chrome: but by padding the cotton in a chrome liquor, and drying the impregnated cloth so as to get a deposit of oxide of chrome, and then dyeing in alizarine black, some fair shades can be obtained.

In calico printing, alizarine black can be used with good results. For a black the following printing colour is prepared:—4 lb. alizarine black are mixed with ¾ lb. bisulphite of soda at 50° Tw.; after standing 24 hours there are added ½ lb. acetate of chrome of 32° Tw., ½ lb. acetic acid 9° Tw., and 4½ lb. thickening. For a grey, 1 lb. of the above black colour is used, mixed with 4 lb. thickening. After printing, the goods are steamed and treated in the manner usual for alizarine colours.

Alizarine black may be mixed with any of the alizarine colours, and thus a great variety of useful and fast shades are obtainable.

PREPARING WOOL FOR PRINTING.

The most commonly-used method for preparing wool for printing is to subject it to a treatment with chlorine. This may be carried out in two ways, in both of which bleaching powder is used as the source of the chlorine.

The first method consists in passing the goods for 15 minutes into the bath of 5 lb. sulphuric acid in 100 gallons of water; this quantity will be sufficient for about 50 lb. of woollen cloth. Next the goods are passed through a bath containing 5 lb. of chloride of lime in 100 gallons of water; this bath must be quite clear, and free from any floating undissolved particles of bleaching powder, which if they got upon the cloth would soon cause it to go into holes. About ten minutes in this bath is sufficient; the cloth is then rinsed and dried, when it is ready for printing.

The second method consists in making a bath of two gallons of chemic, chloride of lime liquor at 11½°Tw., and two gallons of hydrochloric acid in 100 gallons of water. The cloth is passed through this two or three times, then rinsed and dried.

RECIPES FOR DYERS.

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

TERRA-COTTA BROWN ON COTTON.

For 100 lb. cotton. Steep the cotton in a bath containing

3 lb. tannic acid

for six hours; then wring, and pass into a bath containing

2½ lb. tartar emetic

for 20 minutes; lift, rinse, and dye in a new bath containing

10 oz. Bismarck brown R,
4 oz. magenta, No. 2 B.

Work for ½ hour, then rinse and dry.

BLACK ON WOOL.

For 100 lb. woollen goods. Prepare a bath with

10 lb. cutch,
1 lb. copper sulphate.

Enter the goods into this, and boil for one hour; then lift out, allow to cool slightly, and enter into a bath made of

25 lb. logwood extract,
4 lb. copper sulphate,
4 lb. soda ash.

Enter the goods in this, and work for two hours or so at the boil; lift, and allow to lie over-night; then wring, wash, and dry.

RED ON JUTE.

For 100 lb. unbleached jute. Prepare the dye-bath with

1 lb. rocelline,
½ lb. orange,
2 lb. sulphuric acid,
2 lb. alum.

Enter the jute in this at about 120° F.; work for a few minutes so as to get the goods impregnated with the dye liquor, then raise slowly to 180° F., and work to shade; wring out, rinse, and dry.

SLATE ON WOOL.

For 100 lb. wool. Mordant by boiling for 1½ hours in a bath containing

2 lb. bichromate of potash,
1½ lb. tartar.

Then rinse, and dye in a bath containing

2 oz. fustic extract,
¼ lb. galls,
¾ lb. alizarine brown powder,
¼ lb. alizarine black powder,
¾ lb. alizarine blue powder.

Enter the goods in the cold, work for ½ hour, then raise slowly to the boil, and work for 1 to 1½ hour; lift, wash, and dry.

BLACK ON COTTON.

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

20 lb. extract of logwood,
4 lb. cutch,
5 lb. soda ash,
5 lb. copper sulphate.

Heat to the boil, enter the cotton, and work well for three hours; then lift, and allow to lie over-night in a wet condition; wash, and pass into a bath of

1 lb. bichromate of potash

for ½ hour; lift, wash, and dry. The dye-bath is not exhausted, and only about one-third of the various drugs need be added for future batches of cotton.

FAWN DRAB ON COTTON.

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

1 lb cachou de laval,
¼ oz. benzopurpurine B.

Enter the cotton into this bath in the cold, and heat to the boil, taking about ½ hour for the operation; then add

4 lb common salt,

and boil for ½ hour longer; lift, wash, and dry.

DARK OLIVE ON COTTON.

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

3½ lb. benzo olive,
2½ lb. diamine black BO,
2 lb. diamine yellow,
20 lb. common salt,
2 lb soap.

The goods are entered into the bath at 160° F., then the heat is raised to the boil, and the dyeing continued for one hour; then lift, wash, and dry.

RESEDA GREEN ON COTTON.

For 100 lb. cotton. Prepare a bath with

15 lb. catechu,
8 lb. turmeric.

Work in this for 15 minutes at about 150° F., then pass through a hot bath of

2 lb. bichromate of potash

for ½ hour; then re-enter into the catechu bath, to which has been added

1 lb. sulphate of iron.

Work for hour, then add 2 lb. alum and work ½ hour longer; rinse, wash, and dry.

LIGHT GREY ON WORSTED.

For 100 lb. worsted. Mordant by boiling for 1½ hours in a bath of

2½ lb. bichromate of potash,
2 lb. tartar.

Rinse, dye in a fresh bath of

1½ lb. alizarine black.

Enter cold, then heat to the boil and work for one hour; lift, rinse, and dry. Instead of working in two baths, the dye-stuff may be used along with the mordant, and thus the dyeing be done in one bath. The results are equally good.

FAIR TRADE.—Mr. Howard Vincent, M.P., addressing his constituents in Sheffield on Monday night, announced the results of his tour of commercial enquiry round the world. He affirmed that the colonies heartily endorsed the principles advocated by the United Empire Trade League, favouring the extension of commerce upon a preferential basis between all parts of the British Empire. He had seen with his own eyes the enormous prosperity of America, and had noticed the total absence of those ill-fed and underpaid men and women present in every street in our great towns, and he came to the conclusion that to cry for free trade, as we had done for 50 years, was to cry for the moon. He strongly urged the repeal of existing treaties, which acted as handcuffs on inter-British trade.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

BOSTON, Jan. 7th.

The following table gives the importations of dry goods into the port of New York for the period between January 1st and December 30th, during the past three years:—

	1889.	1890.	1891.
	$	$	$
Entered at port	136,703,688	146,892,791	116,257,335
Thrown on market ...	134,931,356	143,740,853	113,983,185

The following British trade marks have been registered at Washington during the past few weeks:—

SANITARY TOWELS.—Southall Bros. and Barclay, Birmingham, England. "The word 'Knapkenette.'"

COTTON THREAD OR SPOOL COTTON.—J. and P. Coats, Limited, Paisley, Scotland. "The representation of concentric rings, having in the central spot a numeral and an embossed peripheral border of the natural wood, including in the ornamentation thereof the same numeral as that displayed in the centre."

SPOOL COTTON OR COTTON THREAD.—J. and P. Coats, Limited, Paisley, Scotland. "The representation of a scale of inches."

A suggestion which has been made not infrequently before has been repeated this week by a Baltimore organ, which recommends the South to plant less cotton and raise more food stuffs. Southern commission agents are requested to refuse advances to farmers who decline to reduce their acreage in the direction referred to. Mr. A. B. Shepperson suggests that growers should plant ten per cent. of the present cotton acreage with corn. Others are in favour of a larger reduction still, on the ground that the Southern grower who diversifies his production, and makes cotton a surplus crop, rarely fails, while the farmer who raises all cotton and buys his food stuffs rarely succeeds.

On the 28th ult. 4,900 bales of Egyptian cotton were imported from Alexandria by the British s.s. *Southgate*. The occurrence is seized upon by a certain clique as an excuse for the advocation of protection to Southern growers of long-stapled cotton. If the tobacco grower benefits by protection, why, it is argued, should not the cotton grower? The South has now attained such power as an industrial centre that the demands of those who represent its interests must be listened to by the Legislature.

During the year ending August 31, 1891, the Southern mills consumed 604,661 bales of cotton, as compared with 546,894 bales for the preceding year, making a gain of 57,767 bales, or 10·56 per cent. The total number of mills reported in 1890 was 336, of which seven have since been burned. Twenty-two new mills were built, and the number of concerns was reduced by 11 by consolidations, making the total number on August 31, 1891, 340 mills. Of this number 277 old and 10 new mills were in operation.

The total number of spindles in the Southern cotton mills was 1,989,845, as compared with 1,819,291 in 1890. The number of spindles in operation was 1,674,690 in 1891, as compared with 1,423,327 in 1890. The location of the active mills, spindles, and looms, and the consumption of cotton in the two years, as given by the New Orleans Cotton Exchange, were as follows:—

States.	Mills.* No.	Looms†	Spindles.†	1891. Bales.	1890. Bales.
Alabama	18	2,045	113,258	39,145	35,772
Arkansas	2	196	6,000	810	433
Georgia	55	10,107	456,959	153,818	146,385
Kentucky	5	677	48,750	14,536	13,509
Louisiana	4	1,428	54,500	13,660	14,066
Mississippi	7	1,327	52,768	15,162	16,069
Missouri	1	....	7,000	1,598	1,644
North Carolina..	107	8,310	429,445	140,508	119,595
South Carolina..	49	10,977	434,537	164,957	144,955
Tennessee.....	23	2,032	96,480	30,508	34,508
Texas.....	3	856	29,476	6,522	3,014
Virginia.....	13	2,763	94,537	23,707	17,224
	287	40,718	1,823,710	604,661	546,894
Less consumed and taken from Southern seaports, and included in port receipts.....				39,379	30,217
Net consumption to be added to crop.....				565,282	516,677

*Mills in operation only. † Employed in mills in operation.

The consumption of cotton by Northern mills in 1890-91 amounted to 2,027,362 bales, as compared with 1,799,258 bales in 1889-90.

A "New Englander," speaking of the spinning of fine counts in the South, says in a local journal that during the last 20 years he has produced roving for 100's to 250's, and in many years for 160's to 180's. The authority quoted adds:—

I have had experience in carding and spinning (ring) 100's in the middle of the South and 80's at the extreme South. The South have a beginning at the present time far better than New England had 30 years ago to manufacture fine yarn and goods at less expense. Many say they need skilled help, but they would soon have it if they made a beginning. In my 20 years' experience, 80 per cent. of the help I learned never saw the inside of a mill, and they made the best help—easier to learn them than help from coarse mills.

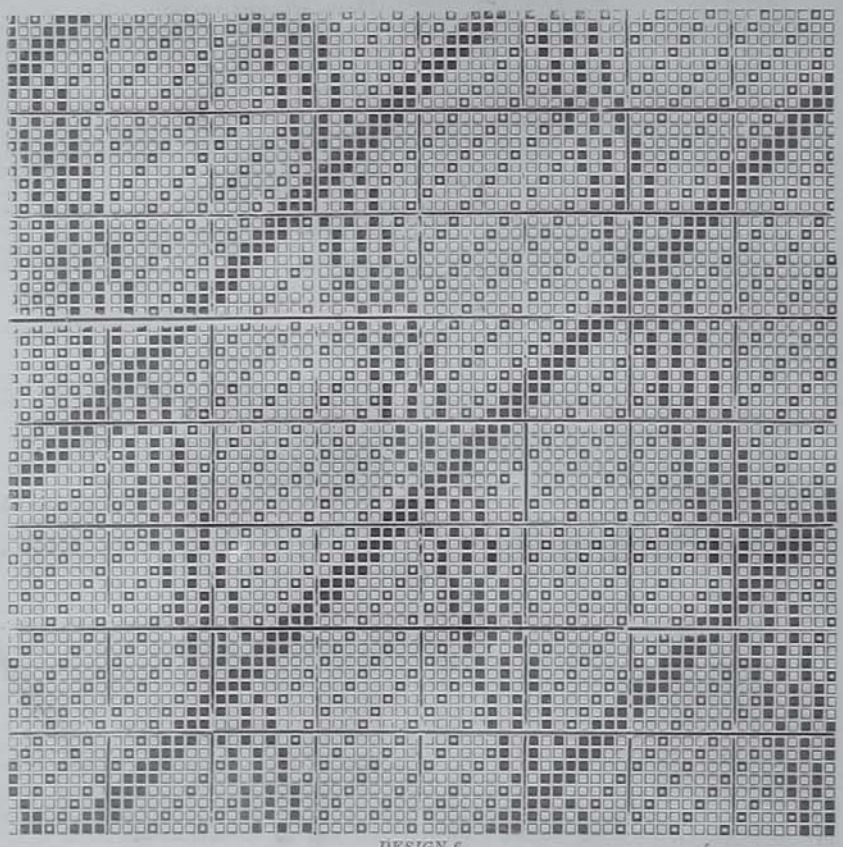
Designing

NEW DESIGNS.

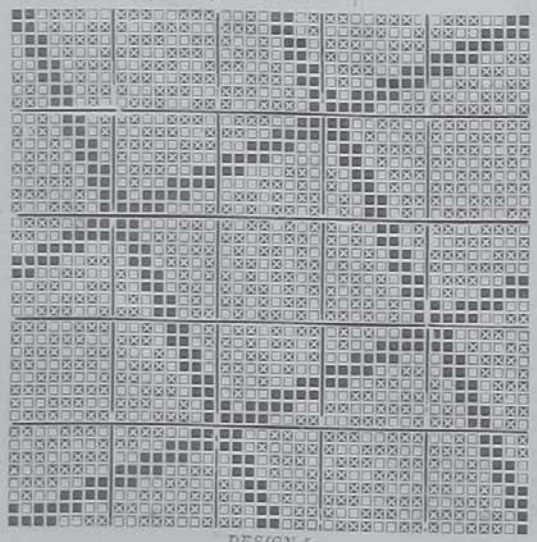
Although for general purposes there are four divisions of the year—spring, summer, autumn, and winter—in dealing with textile fabrics for the wholesale houses there are but two seasons, summer and winter or spring and autumn, the goods to correspond with each season being termed light and dark. Open-work tissues, such as canvas or porous cloths, are sure to have a run during the spring; in fact, the choice of materials already adopted by fashion is almost unlimited. For every-day wear dresses small checks seem to be fancied, generally in two colours, black and grey, brown and indigo, brown and black, or grenat and green, which last is a most effective combination; the checks are so minute that the effect is more of a shot fabric than an absolute pattern. The foundation of all the fashionable cotton dress goods for the forthcoming spring season will be generally a six-shaft twill, six to the round, three up, three down, draft straight over, or in herring-bone stripes, upon which a design is woven of a floral or geometrical character, thus involving the use of 30 and 40-shaft dobbies, or small jacquards. These goods will therefore be not only ornamental but suggestive of warmth and comfort if properly constructed. Some especially desirable patterns are in dark blue, seal, and Lincoln green, with very wide stripes, one being a solid blue; the next mahogany and grey, end and end; the third, end and end of blue and mahogany, then a repeat. Seal brown and green are combined in the same manner; also *cresson* (water-cress green) and grey. A very novel and rich tint, harmonising with all colours, is "Louis grey."

Design A is adapted for a fancy cotton dress material, and is a style very much fancied either for the home or export trade. It will give a good effect in either fine or coarse cloths, and may be woven all grey, bleached, or dyed in solid colours, or woven hank dyed, warp and weft all one shade. Variations may be obtained in half tones, good contrasts, and by shading: if the warp, for instance, be a light pink, the weft might be lily-green. We give a draft and pegging plan, suitable for a dobby of 30 shafts, 38 to the round, the figure being formed by the weft. The following particulars will give a medium fabric, from which heavier or lighter cloths may be made in proportion; 72 ends per inch, 20's single cotton, 48 picks per inch of 16's weft, 28 inches wide when finished, steel bowl calendered, or what is known as the "hard finish." All the fashionable shades can be used with advantage in this make of cloth, and if appropriate grists of yarns are employed some beautiful samples of vesting and chemisette fabrics would be produced from this design.

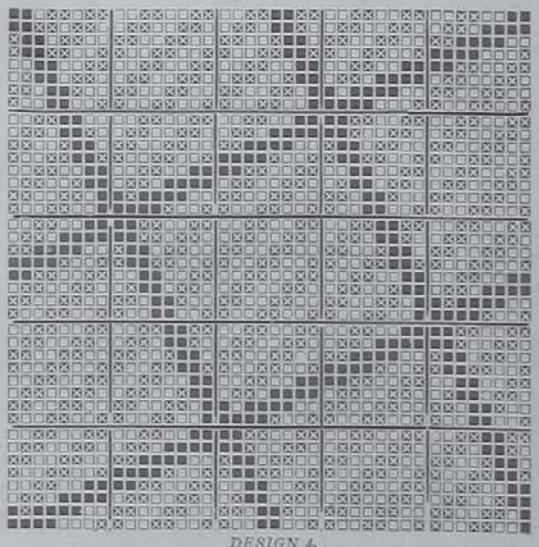
Design 3 is another effect for dress goods, very simple, yet when properly bleached or dyed it is pleasing to the eye, and drapes charmingly. It is somewhat of the oatmeal type of pattern, but not so obtrusive, being more subdued. Two drafts and two pegging plans are shewn. The blank or undotted spaces mean weft to the surface. *No. 1 B* draft



DESIGN 6.



DESIGN 5.



DESIGN 4.

and pegging plan will be found the most convenient for the weaver, although on 12 shafts; yet the draft being straight over, it is rendered more simple. The second draft is on 10 shafts, 16 ends, and is rather complicated, 12 to the round. Either plans may be worked from Woodcroft's section tappets. Warp, 24's single cotton, 40 dents per inch, two in a dent; weft, 18's cotton, 48 picks per inch, dyed in good, bright shades—seal, and every shade of browns, blues, greens, plums, lilacs, drabs, fawns, and deep cardinals.

The two designs now given, *A* and *B*, would produce a beautiful class of goods by the use of lustrous wefts, such as mohairs, silk, etc., and if a good soft finish were applied there is little doubt manufacturers would find an enquiry for the make.

In our next issue we hope to give a few of the new plaid patterns.

GEOMETRICAL SATEEN FIGURING.

In dealing with the arrangement of figures in textiles some time ago in these columns, attention was directed to the effects of joining the sateen positions, thus dividing the unit of space into 5, 7, 8, etc., equal spaces according to the sateen dealt with; as shewn also this week in *Designs* 4, 5, and 6. Previously this system was noticed simply as a means of distributing spot or other figures; now we would shew how this skeleton may be utilised not only for dress fabrics but also for coatings.

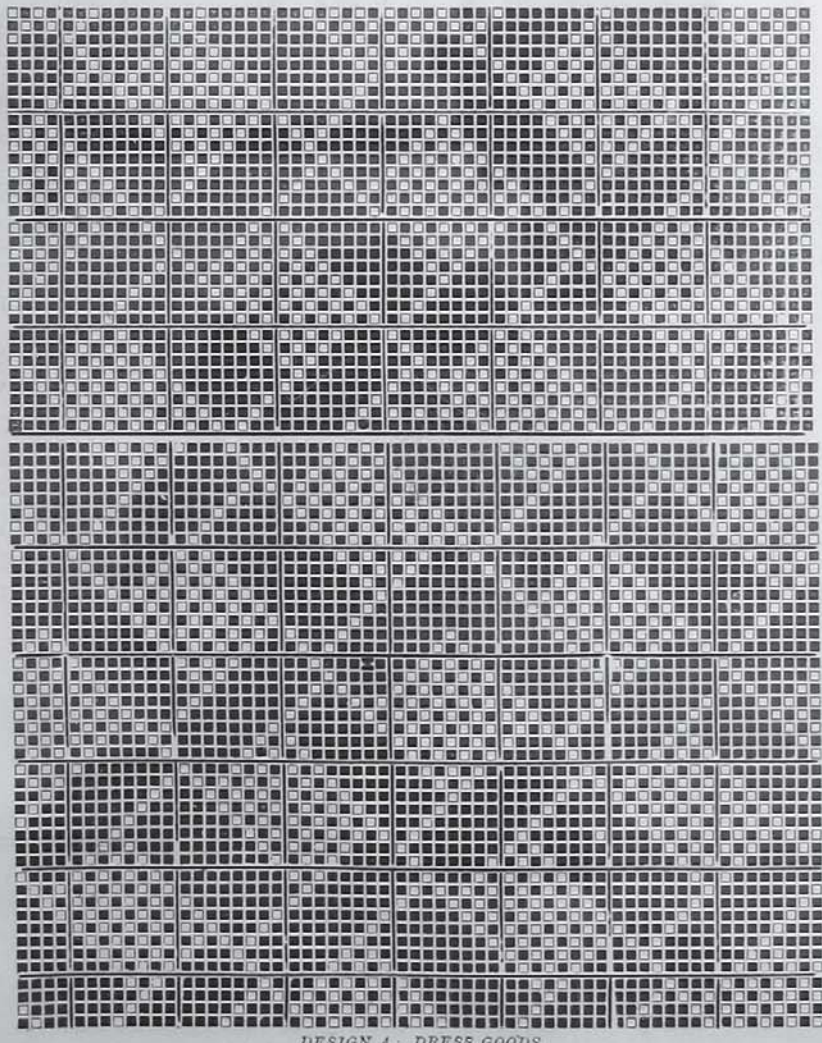
In originating designs for dress goods, little attention need be given to precise construction of design, such as in cutting. With coatings, however, the case is very different. Such designs, in which the individual weaves do not cut each other in a definite, precise manner, lose a greater part of their value, for in coatings the build of the cloth is always of much more importance than ornamentation. Bearing these facts in mind, our remarks respecting the supplied designs will become intelligible.

In *Design* 4, no cutting of weaves is attempted. The skeleton 5-end sateen arrangement in solid type might be developed with an extra silk or mohair weft, while ordinary woollen or worsted yarn forms the 2-and-2 twill ground fabric. Such an effect, we needly scarcely add, is only suitable for dress fabrics. Many useful modifications of this may be carried out on the principles recently noted under the heading "Extra Weft Effects."

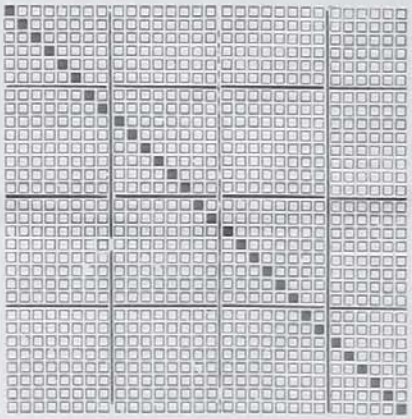
Design 5 demonstrates the coincidence of the skeleton lines with the twill in a 5-end sateen, either warp or weft. Thus in the centre sateen square the twill is upright, while in the other four it is horizontal. Such effects as these might be rendered very effectively as coatings, care being taken with the cutting.

Of the use of a complete knowledge of the construction of sateens, *Design* 6 is an effective example, being constructed on the 8-end sateen basis. In this sateen, while the true sateen twill takes a horizontal or upright direction, the component twill runs at an angle of 45 degrees. The knowledge of this fact enables the designer at once to proceed with the construction of a design in which are embodied in symmetric order these two principle components. In this case the two component twills are warp rib and ordinary weft twill. Such a combination requires very careful management, particularly in the selection of yarns and sett; but some very effective results, both with respect to appearance and handle, may be obtained thus.

For the principles upon which to utilise these and the other sateens to the best advantage, we refer our readers to the articles which appeared in these columns on "Sateens and Sateen Derivatives," in which the construction and properties of all sateens up to 16-ends are fully dealt with.



DESIGN A: DRESS GOODS.



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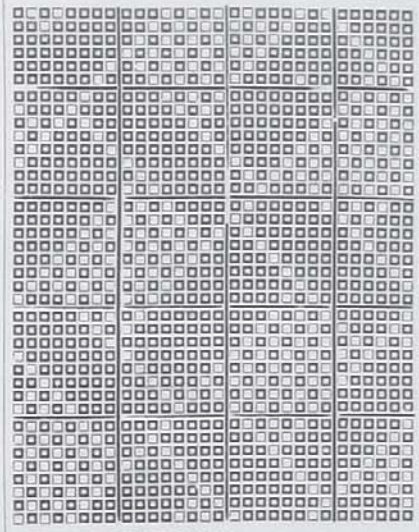
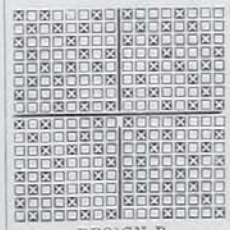
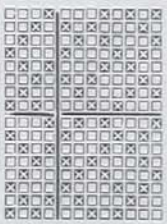


DESIGN A: PEGGING PLAN.



DESIGN B.



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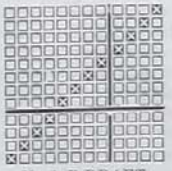

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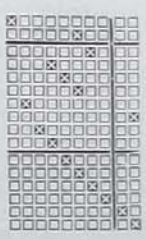


No. 2 B DRAFT.

No. 2 B PEGGING PLAN.

Machinery and Appliances.

IMPROVED REVOLVING FLAT CARDING ENGINE.

MESSRS. HOWARD AND BULLOUGH, LIMITED, ACCRINGTON.

It would almost seem, from the frequency with which we are called upon to notice improvements in carding engines, that cotton machinists have during the past several years arrived at the harvest time of their labours upon this machine.

The evolution of the carding engine from the small hand card that contented our forefathers of the last century, through the improvements of Bourn, Lewis Paul, Robert Peel and James Hargreaves (both of Brookside, Oswaldtwistle), Richard Arkwright, and other early pioneers and their numerous successors in this domain, constitutes a very attractive chapter in the history of invention in connection with the cotton trade. It can, however, only be hinted at here. The invention of the fly shuttle by John Kay, whereby the power of the weaver was more than quadrupled, made a great change in the relation of the weaver to the hand spinner of those days, and a yarn scarcity, if not famine, became the chronic condition of the industry. The weaver stopped for yarn, and the spinner played for want of roving, both to a large extent arising from the inadequate production of carded cotton from the hand cards of the time. To keep up the work it was a common practice for the spinner to lay aside the wheel, take the cards, and prepare his or her own rove before the spinning could proceed. No wonder, therefore, that attention should at a very early time have been directed to improving the carding process.

The two principles that have been struggling in rivalry now for nearly a century and a half were born within a few months of each other. Daniel Bourn, according to the Patent Office records, invented, and on January 20th, 1748, patented, what appears to have been the first roller and clearer card ever made. Lewis Paul, a well-known name, followed him with the first flat card patent, on August 20th of the same year. These were the germs of the two great rival cards of the then future. It is probable, however, that owing to faulty construction little progress was made in securing their wide adoption, the trade preferring to keep more on the old lines. Peel, already mentioned, made a considerable step forward by inventing or introducing into the cotton trade stock cards, which James Hargreaves, then employed in his service, greatly improved by suspending the top card over the stock card by a small counterpoise weight, so that its use was greatly facilitated. This was about 1760, and probably before he had formed any thought of his famous spinning jenny. These did something, though not much, to meet the urgent demand for carded cotton. The invention of the jenny and the water-frame a few years subsequently threw everything further out of proportion than before, and it became a necessity that the carding process should be greatly improved in its capacity of production, if any advantage had to be derived from the jenny and the water-frame. The trade struggled on under this increasing burden until 1775, when Arkwright, with the persistence which marked his character, having adopted the crude flat card as it then existed, wonderfully improved it by the invention of the doffing comb, by which he dispensed with the needle stick for doffing, and obtained a continuous sliver. The two systems of carding advanced

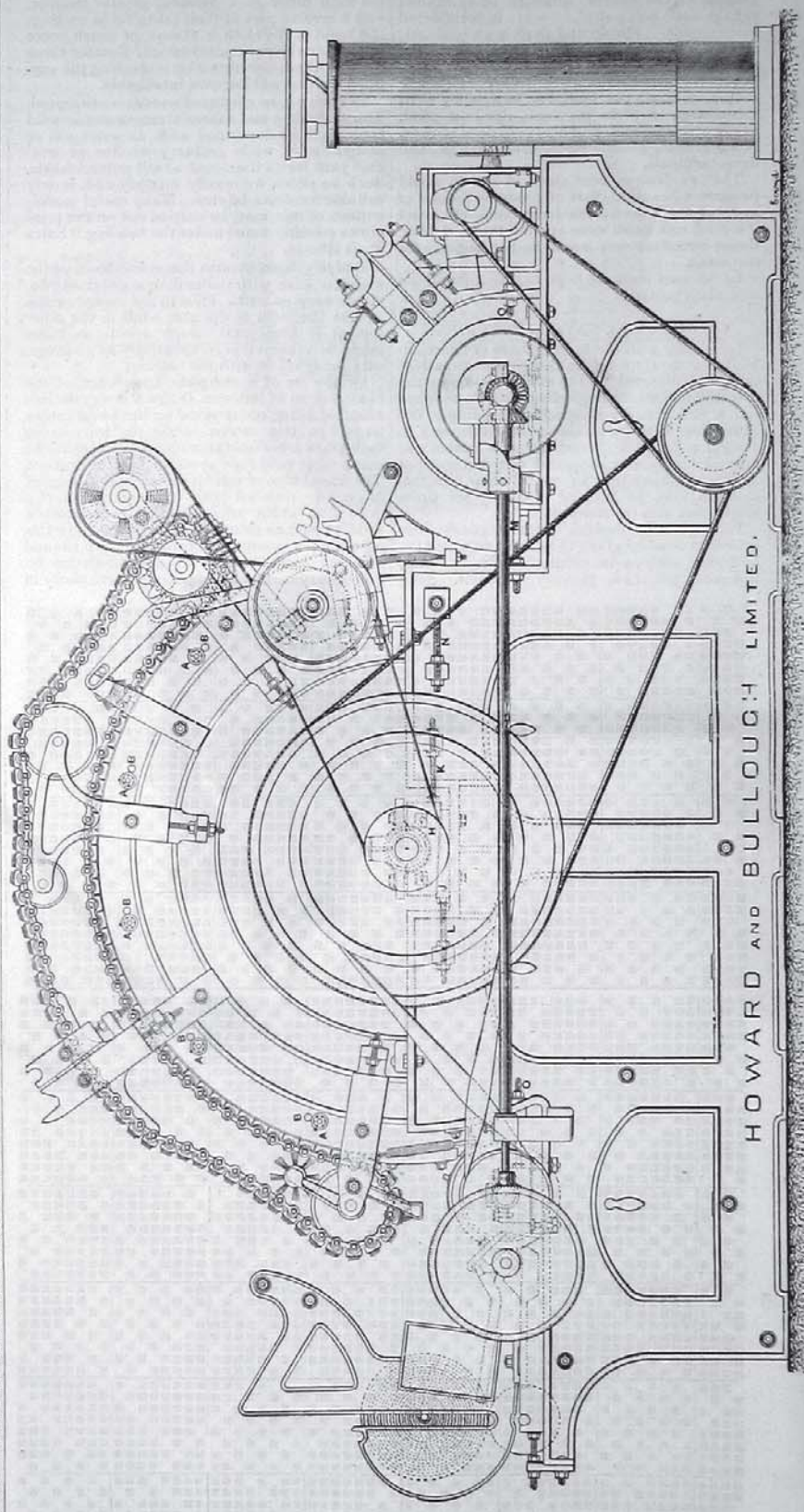


FIG. 1.—SIDE ELEVATION OF CARD WITH NEW FLAT SETTING ARRANGEMENT.

in parallel order, being quietly and slowly improved by various inventors to such an extent as gradually to displace the old hand cards, until the increasing capacity of the roller and clearer card established it as the favourite where a great production was the chief desire and good work was not very material to the end in view. On the other hand, the fixed flat, doing less but better work, made a place for itself in the Bolton trade, in which the best work attainable was essential, owing to the high cost of the finer cottons. And so the rival cards worked side by side, the roller and clearer gradually gaining upon the former until the Bolton district was almost the only place in which it held its ground. It would take up far too much of our space to tell the story of the victory of the one over the other, as it originated in a variety of small matters. But a change was approaching. Better work began to be required in the fine trade, and it was found that the old cylinders of wood, from their sensibility to the alterations in the humidity and temperature of the atmosphere, were quite unsuited for their purpose. They were substituted by iron with great advantage in both types of card. In the stationary flat card there was yet another serious matter to be dealt with, namely, the great expense of the class of operatives who had them in charge—the strippers and grinders. In a less degree, the use of the roller card was similarly hampered, whilst it had many other serious defects. To stand by this card and watch its operations no observer can fail to be struck with the severity of its treatment of the material. Instead of combing it with every possible gentleness, it savagely tears, lacerates, and nips it, whilst, instead of removing foreign impurities, it simply breaks them into smaller dimensions, and renders their extraction much more difficult, if not impossible. Its one redeeming virtue, a large production, could not save it from supersession, therefore, when a rival having other merits, though not supreme in this, should appear. The late Evan Leigh was the first to attempt to obviate the defects of both types of card by his invention of the revolving flat card, which was first patented in March, 1850; improved in October, 1852; and left with the inventor's final touches in February, 1858. The Wellman self-stripping card was another attempt, of American origin, and specially aimed at becoming a mechanical substitute for the manual stripper, whom it soon to a large extent displaced, especially in the fine spinning districts. Though more successful for a time than the revolving flat, this card had not nearly so many germs of good things in it as the invention of Evan Leigh, and it is now giving way on every hand before the perfected types of the Manchester inventor.

The years 1850-60 were a period of great profits in the cotton trade, in which yarns, if they only had the appearance of yarns, could be sold to a good profit. There was, therefore, little inducement to do anything beyond getting as great a production as possible. The next decade was a terribly harassing one, including the American civil war, the consequent cotton famine in Lancashire, and the subsequent difficulties for the trade of descending from famine prices to an average level of values, of which it is now having a reminder in the decline from an average to a low level. Financial disturbances, typified by the fall of the banking house of Overend, Gurney, and Co., complicated matters. In these circumstances, the trade required machinery much more perfect in its character and economical in its working, a demand to which our leading machinists were not slow in responding. Each machine was overhauled with a view to its improvement in every possible respect. The carding engine, as almost, if not actually, the most important machine in the spinning division, immediately engaged an important share of attention. A cursory examination revealed the fact that of the three types then in use, the roller, the revolving flat, and the Wellman, the second combined by far the largest number of sound elementary principles, and offered the best foundation upon which to build future improvements. All the makers of these machines therefore devoted their time, money, skill, and inventive capacity to its development, with the result that by 1880 so many improvements had been effected that they had given it a distinctive lead over its competitors. Since then the harvest of the labour spent upon it has been in process of gathering, and it has been the privilege of the present writer to make many of the results known.

The revolving flat carding engine, when thus taken in hand, had the following marked defects: 1st, unsteadiness in working; 2nd, imperfection in the construction of the cylinder and doffer; 3rd, flexibility in the flats; 4th, imperfect means of clothing both flats and cylinders; 5th, imperfect construction of the bend, or flat course; 6th, inadequate means of original setting of flats in perfect concentricity to the cylinder, and subsequent readjustment after the grinding process; 7th, deficiencies in the grinding appliances, especially for the flats; 8th, imperfect means of restoring the cylinder to its proper position in the event of wear in the cylinder shaft and its bearings; 9th, low production; 10th, imperfect work; 11th, want of compactness; and 12th, short life of the machine. This list does not exhaust the defects, but simply shews the most marked ones, and reveals the fact that machinists resolved upon a considerable job when they undertook the task of perfecting this machine. That so much has been achieved, as we know is the case, is highly creditable to all who have engaged in its improvement.

We have much pleasure in laying before our readers a description of the revolving flat card constructed by Messrs. Howard and Bullough, Accrington, and some improvements just introduced. This card, from its first introduction, has steadily grown in the favour of the trade, and for years past has, we are informed, been taken by it as rapidly as it could be produced, which has been an average of 25 per week. Messrs. Howard and Bullough were amongst the first in seeking to develop its undoubtedly sound principles, and they have been successful to a high degree, and have met with a correspondingly great reward—the favour of the trade.

It will probably conduce to clearness of description and readiness of apprehension on the part of the reader if we follow the enumeration of the defects given above, and shew the means by which Messrs. Howard and Bullough have obviated or eliminated them.

In the earlier days of its history the frame of the revolving flat card was too light for the labour to be performed, and vibration was consequently the result. This, the 1st defect mentioned above, has been remedied by coniderably strengthening the frame, and improving the construction of the cylinder pedestals, making the bearings broader. (2nd.) The wood cylinders and doffers gave place to iron ones long ago, but it was not at first found that even iron ones could have serious imperfections. Any warping in the cylinder casting in cooling, or unequal distribution of the metal in its arms or periphery, destroyed that accuracy of balance absolutely necessary for good work and durability. To obviate any defects of this kind, the cylinders are carefully turned up and ground perfectly true with an emery wheel. Each cylinder is then tested in a specially constructed testing machine, at a great speed of 500 revolutions per minute. Should either cylinder or doffer be 2 ozs. out of accuracy it is strongly indicated in the test, and the defect removed before the cylinder is allowed to pass. The importance of an accurate balance in these parts in maintaining the card in good working order will be obvious, as nothing tends to disorganise the fine arrangements of the machine more quickly than the wear and tear of the bearings induced by cylinders especially, being out of balance. (3rd.) The iron flats were in various ways considerably strengthened. (4th.) The good results that should accrue from the careful construction of the cylinder and doffer just described, might easily be prevented by an imperfect or careless method of clothing. In order to avoid this and ensure perfect accuracy in the form of the cylinder, it is electrically tested by an ingenious machine that shews the slighest deviation from correct form. The clothing is then put on and subjected to a perfectly uniform tension during the time; this applies to the doffer as well. (5) The imperfect construction of the bend or flat course, and the difficulty of making accurate adjustments to the wear of the clothing and other parts affecting the good working of the machine, was long a difficulty to the builders of these machines, and the improvement of this part has been a crucial test of each maker's skill. The method adopted by Messrs. Howard and Bullough has been to introduce a rigid bend of great strength and accuracy of construction, and of almost absolute stability. Upon the upper surface of this is mounted a second bend coned upon its upper surface, the direction of the cone being towards the side of the cylinder. Upon the conical surface of this bend or large cone is placed a smaller bend, or small cone, having its under surface coned at the same angle in the direction opposite to the former, and resting upon it. The upper surface of this forms a segment of a cylinder, and constitutes the flat course. It will be obvious that a bend constructed in such a manner as this can be made mathematically accurate in comparison with the ordinary flexible bend. The method of maintaining the correct relationship of the parts established by its introduction we will leave for description a little later.

Regarding the methods of grinding the cards, Messrs. Howard and Bullough do not concur in the most recent views upon this subject, especially in relation to the grinding of flats. By the special care they take to obtain a rigid flat, and the high finish they impart to it in every respect, they contend that the grinding can be accurately performed from the back or grinding face of the flat, and that there is no need for complex appliances to perform that operation from the working surface. As regards (8) the imperfect means available for restoring the cylinder to its proper position in the event of wear in any direction in the cylinder shaft and its bearings, it is provided for in the following manner: The pedestals for carrying the cylinder are constructed in two parts, the pillar and the pedestal head. As will be seen from Fig. 1, between the pedestal head H and the pillar there is interposed a wedge-shaped piece J, the lower face of which is a level and the upper an inclined plane. This wedge is attached to the screwed bolt L, the other end of which passes through a lug upon the frame side, and has locking nuts upon it. On the opposite side a similar bolt K connects the frame side and the pedestal head. On the inclined plane of the wedge parts rests the corresponding inclined plane formed upon the lower surface of the upper part. When it is necessary to adjust the cylinder, which will

be very rarely, it can be set vertically either higher or lower by the further insertion or withdrawal of the wedge J by means of the bolt L; and a lateral adjustment can be secured by means of the bolt K. This method of constructing the pedestal renders practicable the nicest adjustment of the cylinder to the bend, as it is easily moved in a horizontal or vertical direction from any distance required down to as low as the $\frac{1}{1000}$th part of an inch. When the adjustment has been made, the two portions of the pedestal are bolted together so firmly as to become for all practical purposes a solid piece.

We now come to the point previously reserved (6), namely, the inadequate means provided in most instances in the flexible bend for originally setting and afterwards maintaining the perfect concentricity of the chain of flats to the cylinder, the means provided in this card, and their recent modification by the application of a patented invention by Mr. Alfred Hitchon, who has for a long time been connected with the firm, and who is so widely known for his important inventions in connection with sizing and winding machinery, to which his attention has hitherto been mainly confined.

By the aid of the accompanying illustrations, if the reader will kindly follow our description, little difficulty will be experienced in comprehending the plan of adjusting the flats hitherto followed, and that by which it has been substituted. Fig. 1 shews the side elevation of the card as it now appears with the new flat setting arrangement. Those who remember its previous appearance will be aware of the simplification that has occurred. Fig. 2 is a cross section of the bend, shewing the original method of adjusting the flat. Fig. 3 shews cross section of bend and new setting arrangements. Fig. 4 gives the plan and part section of the parts shewn in Fig. 3. Fig 5 shews front elevation and top part of bend.

As we have already in a previous paragraph described the bend formed of the larger and smaller cones, it will not be necessary to go over this again. In setting the flats, when the bottom or larger cone, which rests upon the rigid bend, is pushed forward under the smaller one by means of the screw E, Fig. 2, it slightly elevates the upper cone, whilst a reverse movement has the opposite effect. Thus the flats resting upon the cylindrical face of the upper cone are correspondingly raised or lowered by means of this screw, the end of which terminates in a graduated measuring disc. A movement of the screw to the extent of one of its divisions lowers or raises the upper cone with its superincumbent flats $\frac{1}{1000}$th part of an inch. When the flats have been properly adjusted at any one of these points the rest of the setting is easily accomplished, as the measuring disc only needs to be set to the same figure upon the others, when the same accuracy is obtained. The upper cone when carrying the flats is sufficiently flexible under their weight to follow any adjustment that may be made of the large cone, though, to make assurance doubly sure, its extremities are each held by a helical spring, the action of which tends to pull it into position.

It will be observed from Fig. 2 that the setting screws we have described were carried upon brackets attached to the side of the machine frame. An examination of the figure will shew that a possible disadvantage might arise from this, namely, a lateral outward pressure, which after setting the flats to a very fine working position would perhaps bring them down into contact with the clothing of the cylinder. This would occur if the brackets carrying the setting screws yielded sufficiently to draw the large cone backward any appreciable extent. We do not think that such a contingency has arisen or ever is likely, and yet it is quite conceivable that it might occur from one or two causes.

Careful mechanicians will obviate these contingencies by removing them altogether, and that is what has been done in this case by Mr. Hitchon's invention. Fig. 3 shews the means by which this has very ingeniously been accomplished. In this it will be seen that the bracket and all the lettered parts of Fig. 2 have been removed, to the advantage of the general appearance of the card, as is amply shewn in Fig. 1, which is a view of the new arrangement set in working order, and by which the flats can be raised or lowered as required. Mr. Hitchon takes the large cone of the bend as his base of operations, and sends through it a screw bolt into the card side as shewn. On this bolt is the adjusting nut A, and behind this the index disc. Behind the face of the cone D upon the bolt is the backing wheel-nut C, by turning which, in conjunction with the adjusting nut A, the required adjustment of the flats to the cylinder can be made. In Fig 5 is shewn a front elevation and top part of bend, shewing the index discs and the closely adjacent circular holes to admit the pinion wrench by which the wheel nut is operated. In Figs. 3 and 4 the pinion wrench is shewn in gear. Whilst offering every facility for quick adjustment, the details of the arrangement are such as to prevent any tampering with them by unauthorised persons.

The three objectionable points of the card in its old form call for no notice, as when the improvements described had been made they disappeared.

The above description shews that the last

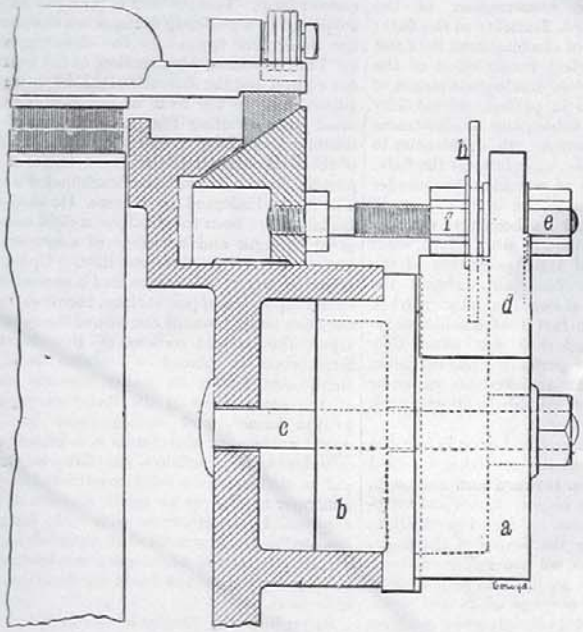


Fig. 2.—Cross Section of Bend, shewing Original Method of Adjusting Flats.

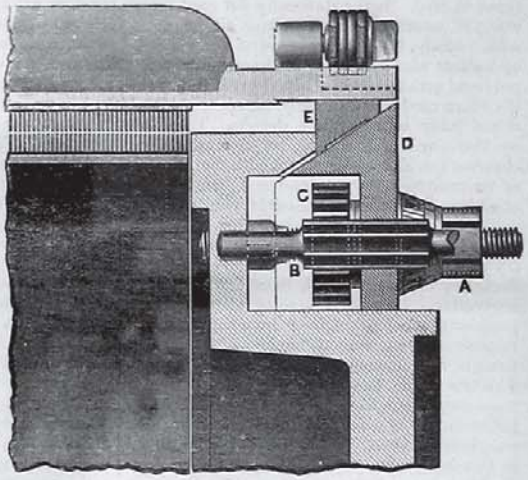


Fig. 3—Cross Section of Bend, and New Setting Arrangement.

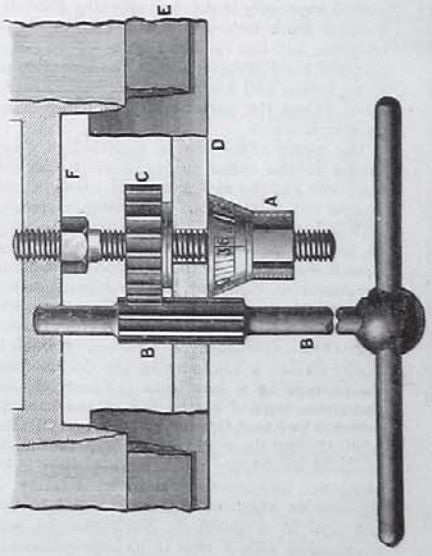


Fig. 4.—Plan and Part Section of Fig. 3.

objection that a hypercritic could make has been cleverly obviated in a very simple and ingenious manner, and in a way to prove that the firm of Howard and Bullough are not likely to lack or suffer from the want of inventive skill.

Any further information will be afforded by the firm on application.

MESSRS. SAMPSON AND CO., leather belting manufacturers, Stroud, have recently received orders for, and have now in hand, double leather belts of the following: 18 in., 20 in., 24 in., 28 in., and 60 in. wide respectively, and all on their system, "without cross-joints," the latter width to transmit 500 i.h.p.

On Monday morning the engine which runs the old mill of Messrs. Walker and Lomax, Limited, at Moorside, Bury, broke down, and it is said that there is little prospect of the mill, which is used for spinning purposes, being re-started for some weeks to come, the breakdown being a serious one.

At the end of last week a meeting of the supporters of the proposed new cotton mills in the old Vulcan Works was held in the Bury Athenæum, when there was a pretty good attendance. A goodly number of shares were taken up, and the promoters seemed confident of ultimate success. The following were elected as provisional directors: The Mayor (Alderman Parks), Alderman Brierley, Councillors Pickup and Byrom, Messrs. Roger Walker, John Barnes, G. C. Rostron, James Wood, James Walsh, and Thomas Killon.

Blackburn.

Early on Wednesday morning a fire broke out on the second storey of Messrs. T. M. Eccles and Co.'s Card-

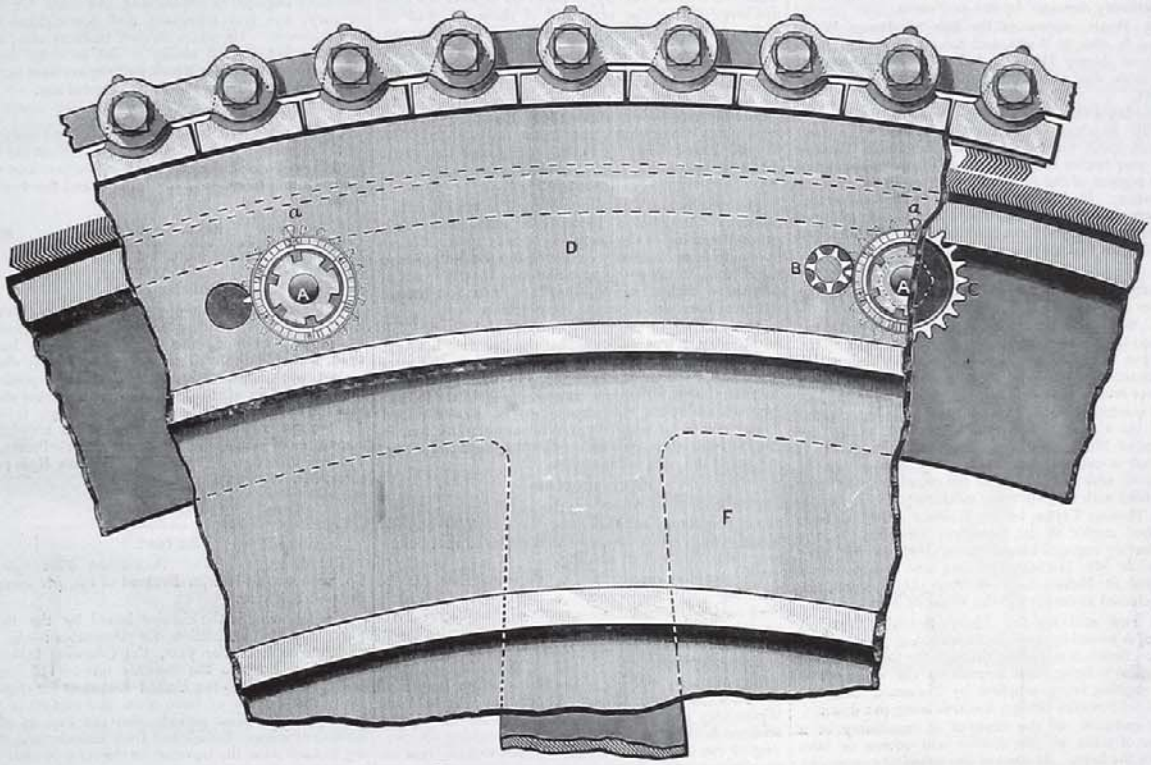


FIG. 5.—FRONT ELEVATION AND TOP PART OF BEND.

News in Brief.

ENGLAND.

Bolton.

At St. Luke's School, on Tuesday, Mr W. S. Taggart gave a lecture on "Cotton and its Manufacture," setting forth the various stages of cotton manipulation up to its conversion into cloth. He especially emphasised the importance of the minute workings of the different machines. By means of views thrown upon canvas his observations were well illustrated, and the discourse was listened to with great attention. The lantern and slides were ably manipulated by Mr. Percy Knott.

Brighouse.

On Thursday the workmen employed in the "dressing" department at Messrs. Overend Bros., Limited, silk spinners, Alexandra and Prince of Wales's Mills, Brighouse, came out on strike. The matter in dispute is stated to be that some time ago the men were reduced ½d. per lb on weight of silk dressed, and they are now demanding that the ½d. shall be restored. It is stated that about 300 men and boys are affected by the dispute.

Bury.

The number of members receiving pay from the funds of the Bury Spinners' Association during the month has been 68, or a weekly average of 17, and the expenditure has amounted to £72 18s. 2d., and the gain in funds £28.

well Mill, Waterfall, whereby two spinning frames were destroyed.

Mr. George Ball, secretary of the Operative Spinners' Association, has been dismissed by a committee of his Association. This person was not long ago elected to the Town Council in place of the late Thomas Fenton, his predecessor in the secretaryship, who also represented the Spinners' Association in the Council.

Bradford.

The workpeople of Messrs. C. Beverley, junr., and Co., commission wool combers, Bradford, on Saturday presented to their late manager, Mr. Frank Hartley, a marble timepiece, as a token of their good wishes on his leaving them to start business for himself, after a service of above sixteen years with his late employers.

A number of weavers employed by Messrs. Wallis, Wilkinson, and Co., Slack-side, Wibsey, left their work on Wednesday afternoon. The masters have reduced the wages on certain classes of coatings. The weavers refuse to submit to the reduction. Cordial relations have hitherto existed between Messrs. Wallace and their employés.

Mr. G. A. J. Schott and his assistant, James Vaughan, the patentees of the new principle of making pile on both sides of the cloth, are preparing to start 40 looms at Valley-road, near Bradford. The looms will require to work from 20 to 40 shafts of heads for the plain plush on one or both sides of the cloth, and for figures, either for one or both sides of the cloth, the ordinary jacquard engine will do.

Cleckheaton.

About 100 of the men who 28 weeks ago turned out at Messrs. George Briggs and Sons' (Rawfolds Dyeworks), demanding a reduction of working hours, are still idle, the remainder having obtained work elsewhere. The firm have now over 40 new hands employed, and as applications are numerous they could have more if they had work for them. For some time there have been no overtures whatever made to the firm, and it is not now likely that any of the strike hands will be reinstated. They are still receiving an allowance from the Gasworkers' and General Labourers' Union, of which they are members, and on this allowance, augmented by subscriptions from fellow-workers in the district, they manage to exist. Messrs. Briggs have granted the reduction of hours asked for, and have told their old hands that if they apply for work individually they will, with two or three exceptions, be taken on as opportunity affords, but they have not accepted this offer.

Cliftheroe.

On Thursday morning the Salford Bridge cotton mills (Perseverance Manufacturing Company) took fire. The entire building, seven windows long, four wide, and four storeys high, was destroyed. The damage is estimated at £3,000, covered by insurance.

Heckmondwike.

At a monthly meeting of the Council of the Chamber of Commerce on Tuesday, Mr. W. E. Firth, president, in the chair, a letter, with enclosures, was read from the Imperial British East Africa Co., dated the 5th inst., asking the Chamber to petition Parliament at once upon the subject of British influence and trade in Africa. The company proposed to obtain a bill for an annual subsidy for the guaranteeing of interest upon an estimated capital of two millions, required for the construction of a single track of railway from Mombasa (the finest harbour on the East Coast of Africa) to Victoria Nyanza.—The Chairman suggested that the Chamber accede to the wish of the company either by independent action or through the Associated Chambers, and the Secretary promised to communicate with the company accordingly.

Heywood.

The quarterly report of the Heywood Cardroom Hands' Association shews an increased membership of 129, making a total gain of 351 for the year. The balance in hand was £8 16s. 8½d.

On Wednesday night the mill belonging to the Wham Bar Spinning Company at Wham Bar, near the Summit, Heywood, took fire in one corner of the top storey, used as the scutching-room, and, spreading rapidly, the flames got complete possession of the mill. As it was seen to be impossible to save the mill, the efforts of the firemen were directed to the safety of adjoining property and the engine-house. The fire, however, got into the engine house, and it is feared that the engine is ruined. The mill was a building three

storeys high and ten windows long, almost square. It contained over 20,000 spindles, and employed about 100 hands.

A good example has been set by Mr. George Taylor, of Texas. Mr. Taylor was formerly a resident in Heywood; but now he is the manager of some mills in Texas. Two years ago he provided prizes for the students attending the classes of the Co-operative Society, Heywood, and now he has agreed to give £30 per year for three years for the benefit of the students of the newly formed technical school.

Manchester.

Mr. F. W. Wilson, of Messrs. Wilson Bros., Limited, bobbin makers, Todmorden, has just returned from a visit to the United States, and may now be found as usual at 14, Market-place.

Early on Wednesday morning a fire broke out on the premises of Messrs. John Lees and Brother, Manchester warehousemen, York-street. The contents were seriously damaged by fire and water.

Lady Watts, widow of the late Sir James Watts (Messrs. S. and J. Watts and Co., home-trade merchants), of Abney Hall, Cheadle, formerly Mayor of Manchester, died at Cheadle on Monday at the age of 76 years.

Yesterday week, at the Eccles Police Court, Messrs. Sackville Brothers, calico printers, Eccles, were fined 20s. and costs for employing a lad named Thomas Floyd over twelve months without his name appearing on the register of the firm as having passed the examining doctor. Mr. A. P. Vaughan, factory inspector, who proved the case, said the Factory Act required that the youth should have been examined within seven days after his first employment.

Oldham.

Messrs. Platt Bros. and Co. have replaced a number of mules at the Lyon Mill, Shaw.

Mr. William Hartley, who for several years has occupied the position of secretary and salesman to the Crompton Spinning Co., has tendered his resignation on account of ill-health. At the time of writing no successor had been appointed.

The machinery has been sold and is being cleared out of the Clarence Mill, which has been worked by the firm of Messrs. Suthers, Saville, and Clegg. It is said that a private limited liability company is in formation, and will take over the premises, which are to be filled with ring spinning machinery.

Mr. Thomas Taylor, of the Windsor Mill, has been appointed carder at the Broadway Spinning Co., the latter having engaged himself to the Glodwick Spinning Co., while Mr. Herbert Jackson, who was formerly employed at Messrs. Lees Brothers, Hollinwood, has been selected as carder for the Windsor Mill.

The new mill for the Holly Spinning Co., at Royton, is roofed in, and the fire-proofing nearly completed. Steam is not going through the premises, and every effort is being made to push on the work. The steam engines, being supplied by Messrs. Pollitt and Wigzel, of Sowerby Bridge, are also being put down.

The question of the renewal of machinery at a number of mills in this district will sooner or later come to the front. At some of the spinning companies, we believe, attention is being given to the preparation department, with the object of introducing up-to-date machines to replace others not up to the mark. Were the companies in a better position this replacing of machinery would no doubt become quite extensive.

On Saturday afternoon about 40 or 50 members of the Oldham Society of Engineers paid a visit to the works of Messrs. Buckley and Taylor, Castle Ironworks, Oldham. The party were conducted over the premises, and explanations entered into as each department was reached, considerable interest being taken in the completed component parts of the steam engines for the Earl, Pine, and Pearl Spinning Companies, and also one of a very large make for abroad.

The members of the Operative Cotton Spinners' Amalgamation have commenced to pay an increased levy of 3d. per week, which will remain in force during the whole of the present year, when it will again come up for consideration. The object of the levy is to increase the power supply in the way of augmenting the reserve fund of the amalgamation in order to be all the better prepared for the coming battle which they say is to take place with the employers. The Cardroom Operatives' Amalgamation is also taking action in a similar direction. If they are to lose, it is evident the workpeople mean to fight desperately hard before they are subdued.

The year's bankruptcy work in the Oldham district shows there is ground for congratulation, and the Official Receiver says "it is much to the credit of the trading community in the Oldham bankruptcy district that there are so few cases of bankruptcy within it. What few there are are of the most trivial and unimportant character. One would think that these facts conclusively shew that the trade and commerce of this large and important district are generally conducted upon sound principles. There were 22 petitions filed in 1891 as against 16 in 1890, and 21 receiving orders made as against 10 in 1890. Of the 21 receiving orders made 19 of the debtors resided or carried on business in the County Court district of Oldham, one in the Rochdale district, and one in the Bacup district. There have not, therefore, been any cases during the year from the Saddleworth district. Orders adjudging the debtors bankrupt were made in 20 cases, but one was afterwards annulled on payment of a dividend of 20s. in the pound, and in one case a composition was accepted by the creditors. Statements of affairs were filed in 19 cases, one of the debtors having absconded, and another not having yet filed his statement. The total liabilities in the 19 cases in which statements have been filed amounted to £8,870 3s., as against £28,434 15s. 8d. in 1890, and the total assets to £4,807 6s. 11d., as against £11,527 12s. 6d. in 1890 The liabilities of the absconding debtor are estimated at £2,000, and the assets at £200. There have been four applications by debtors for their discharge during the year, and of those one had his discharge suspended for two weeks, one for six weeks, and the other two for six months each. Under the Companies (Winding-up) Act, 1890, two petitions have been presented in the Oldham County Court. 42 deeds of arrangement with creditors registered under the Deeds of Agreement Act, 1887, from the Oldham bankruptcy district have been made, the total liabilities in the cases being £29,285 19s., and the assets £12,759 13s. 11d.

Preston.

The officers and Committee of the Preston Operative Spinners' Association have been authorised at a general meeting of the members to take such action as they may deem necessary to induce the non-unionists of the district to join the association. In the event of persuasive tactics failing, they are "to adopt more stringent measures to secure the object in view."

At a meeting of the mill operatives of Lostock Hall on Monday, it was proposed that the following holidays be asked for, viz: One day at Christmas, one at Easter (Monday), three at Whitsuntide, and four in August. An amendment, which was carried, proposed the following: One day at Christmas, two at Easter (Good Friday and Saturday), two at Whitsuntide, and four in August; the latter to commence on the second Monday, instead of the first, as heretofore.

Ramsbottom.

The Rose Mill Manufacturing Co. have now got about 700 looms at work, and the remaining 200 are being steadily gaited up, and it is expected that before long these also will be running.

The building operations at the new Star Manufacturing Co., hitherto known as the Cobden Mill, have been delayed owing to the severity of the weather. We are pleased to say that affairs have reached such a point that the working of the shed has now become a certainty.

The quarterly meeting of the Ramsbottom branch of the Bury Cardroom Hands' Association was held on Wednesday evening at the Grant's Arms Hotel, the business being of a formal nature, comprising the passing of the balance sheet and various reports, besides the election of a committeeman.

Rochdale.

Mr. John Mason, Globe Works, Rochdale, has just received repeat orders for drawing frames, slubbing, intermediate, and roving frames, from Messrs. Joshua Hoyle and Sons, Limited, for their Bacup and Summerseat Mills. The same firm has also been entrusted by the Roach Mills Co., Ltd., Heywood, with repeat orders for intermediate and roving frames, to replace Mason's machinery put in 27 years ago.

SCOTLAND.

Brechin.

At a meeting of the Executive Committee of the Brechin Mill and Factory Operatives' Union, a comparative statement of wages has been submitted by the Secretary from the various works in town, together with the wages paid in other towns engaged in the same industry. The Secretary was instructed to prepare and forward to the employers copies of the comparisons made, with a view to strengthening the recent claims of the workers for an increase of wages.

Dunfermline.

At a meeting of the Burgh School Board on Monday, the resolution of a previous meeting was confirmed, agreeing to the formation of a technical evening school for the Dunfermline district. A committee was appointed.

Dundee.

The new Spanish tariff is likely to put a complete stop to what was once a good trade between Dundee and Spain, the duty on jute, hemp and other fabrics having been advanced by 600 per cent.

About 70 young women employed in the cop winding department of Tay Jute Works, Dundee, came out on strike on Monday afternoon. The strikers alleged that since the weight of cops per tray had been reduced they had suffered an disproportionate reduction in wages. After the workers had discussed their grievances in Mid-street Hall, they, on the advice of the Rev. Henry Williamson, agreed to resume work on Tuesday morning.

At a meeting of the Dundee Branch of the Scottish Bleachfield Workers' Association, held on Saturday night, it was reported that the Masters' Association had not sent any definite reply to a request for an increase of 5 per cent. on the rate of wages. The meeting agreed to send a circular to each employer renewing the demand. Delegates were appointed to the Trades' Council, and it was decided to take steps to get all non-union bleachers to join the society.

Mr. George Gilroy, of the extensive firm of Messrs. Gilroy, Sons, and Co., Limited, died at his residence, Castle Roy, Broughty Ferry, on Tuesday. Deceased had been engaged in the trade of the town for half a century, and had witnessed and participated in its development. He was a shrewd business man, and to his perseverance and ability is due in large measure the prominent position which for long has been occupied by his firm. He was almost 77 years of age.

Glasgow.

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

U.S. & Canada.	W. Indies and S. America	Australasia.	African.	Continent.	Totals.	Totals previous week.
£22,767	232	105	238	306	158,704	19,083
39,185	20	—	229	—	39,647	12,202

Pollokshaws.

The annual meeting of the Pollokshaws Weavers' Friendly Society, which is one of the oldest societies of its kind in Scotland, being established so far back as 1749, was held in the Trades' Hall on Friday evening of last week, Mr. Stevenson Crawford, preses, in the chair. The treasurer's report for the year shewed that the balance at present in the society's favour is £1,953 5s. 2½d. The following were appointed a committee of management for next year:—Preses, Mr. Thomas Prentice; secretary, Mr. William Kyle; treasurer, Mr. William Taylor.

IRELAND.

Belfast.

The directors of the York-street Flax Spinning Co announce an interim dividend of 15s. per share for the past half year.

The following is the circular issued by the Belfast Flax Supply Association for December:—As this month completes the year, the following tables are issued in addition to the monthly one:—The imports of flax and tow into the United Kingdom for 1890 and 1891, the exports of linen yarn and exports of linen piece goods for same periods, also the exports of the leading articles of British and Irish manufacture, shewing in each case the increase or decrease in 1891 with percentage results. In the imports of flax and tow there is a decrease in the quantity of 6·6 per cent., and in value of 2·8 per cent.—the principal falling-off is from Russia—9,608 tons or 14·4 per cent.—but there is an increase from Belgium amounting to 12·5 per cent. The linen yarn exports exhibit a small decrease for the year of 3·0 per cent. in quantity. The decline in shipments to the "States" amounts to 699,700 lb., or 65·1 per cent., but Germany and France both shew moderate increases. The exports of linen piece goods have decreased in 1891 by 13·3 per cent. in quantity, and 12·8 per cent. in value. To the United States the decrease amounts to 17,622,700 yards, or 17·9 per cent, and to the F.W. Indies 5,974,700 yards, or 24·8 per cent.; but Australia has increased the shipments by 9·7 per cent. A rough estimate of the Irish flax crop has just been compiled, and stands as follows:—

	Acres.	Yield in stones.	Tons.
1890	96,896	33·10	20,045
1891	74,672	26·43	12,335
Decrease,	22,224	6·67	7,710
or	22·93%	20·15%	38·46%

Lurgan.

A fire broke out on the premises of the veining and hemstitching factory on Thursday week, and, despite the utmost exertions, the extensive establishment was literally burned to the ground. The factory is the property of Mr. J. Malcolm, D.L., J.P. The loss is covered by insurance.

Scotch "Limiteds."—Of joint-stock companies registered in Scotland during the past year, the following were textile, namely, two cloth manufacturing companies; and one each for bleaching materials, calendering, calico printing, floor-cloth, rings and flyers, rope spinning, and sewing machines.

Miscellaneous.

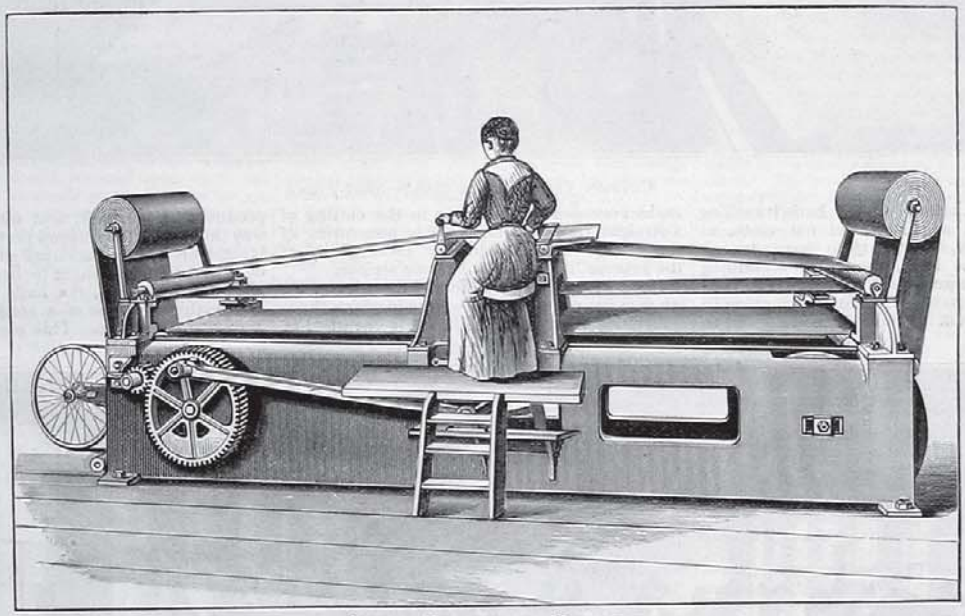
CONCERNING VELVETEEN.

(Extracted from "The Diary and Buyers' Guide" for 1892, issued by Messrs. Henry Bannerman and Sons, Limited, Manchester, by kind permission.)

We have now to take leave of the weaving shed and follow the cloth into the hands of the cutter, who is to raise that smooth surface into a velvet pile. Before he begins, and in order to facilitate his cutting operations, his cloth will be subjected to a certain amount of liming and stiffening. This done we have the choice of two forms of cutting, one by hand and another by machinery. We will, if you please, take the hand cutting first. In pursuance of this object we may go where the velveteen cutter works in a room of his own house—it may be in the city or in some country village or town. Met with under these conditions nothing can be in greater contrast with the uproar of a weaving shed than the peaceful quiet of the cutter's silent trade. Save for the sharpening of the instrument with which he works he may pursue his vocation from morn till eve in comparative silence, for his knife makes no perceptible sound as it passes over the surface of the cloth. It is not in this direction, however, that we turn our steps, but to where, in a provincial town, a number of these cutters are gathered together in one building. Here we find ourselves in a room well-lighted from numerous window-spaces, good light being a necessary requirement in the process of cutting.

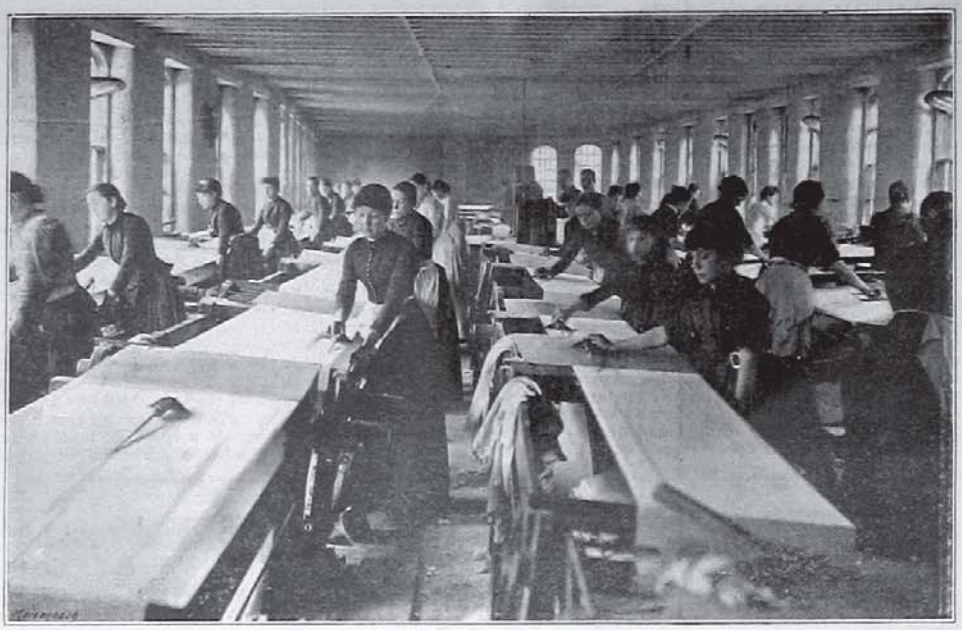
In this room we see, closely arranged together, a number of frames upon which cloth has been stretched for cutting purposes. These frames are of very simple, and even rude construction, and are provided with roller and ratchet wheel arrangements, by which the cloth is drawn over and tightened. Many of these frames shew the cloth arranged in a sloping fashion, towards the side where the cutter stands, and a length of two yards is seen exposed on the surface of the frame. The cutter, a woman or a girl it may be in this case—for female labour preponderates in velveteen cutting—stands at one end of the frame and by the side of it. She holds in her hand an instrument such as that you see lying on a piece of cloth in the foreground of one of the illustrations. It is a knife about two feet long, square shaped where it is fastened to the woollen handle or rest, but tapering away to a sharp-pointed blade of the extremest fineness. This blade portion, which may be bent into an arch, and which shews its temper and fitness by the perfect curve it makes in bending, is placed in a closely-fitting sheath or guard, which is so constructed as to perform the work of a plough, and discloses the sharpened blade, just perceptible, at a due and measured distance of about three-quarters of an inch from the tapering end of the bill. Before the cutter applies her knife to the piece she scrapes the surface of the cloth with a blunt knife, and brushes it with a card to loosen the lime which has been put in it in the preparatory process. This scraping and brushing has the effect of loosening the surface, and renders the cutting easier. When the cloth is ready for operating upon, the cutter finds the first adhesive line of the warp, and introduces the guide or guard of the knife into the floated weft which forms the race. Balancing herself upon her right foot she passes the knife along the race in a straight undeviating line to the end of the two yards, carrying her left foot forward to a distance of a yard in the process. Now, if we consider that in a piece of velveteen, 24 inches wide, there may be from 950 to 1,000 races, and that it takes about an hour to cut a two-yard length, it is evident that in her forward and backward movements the cutter must indeed go through a great deal of exercise in the course of a day. This form of cutting we may call the short frame, but there is a longer run, such as is shewn in one of the illustrations, where the pieces are seen stretched out to lengths of 9½ or 10 yards. The cutter here takes charge of two pieces, cutting them alternately, as he or she walks up and down between them. This long-run cutting requires more strength and endurance on the part of the cutter than the other. As you watch this operation of raising the pile, and see it growing upon the surface of the cloth, and have certain things explained to you regarding the means by which it is accomplished, you are put in possession of some interesting facts. You note, for instance, how delicately the knife is adjusted to serve the purpose required. When it is introduced to the race and the point of the guide pushed forward, you see that it lifts up some fifty or sixty loops of the floated weft and holds them tight until the cutting begins. Then, as the knife slides on, the pile rises on either side of it in equal lengths. To secure this equal distribution of pile the knife should not lose much of its keenness until the two yards have been completely cut. You are told, too, that the skilled operator is keenly sensitive of the way the knife works in the weft, and that there is a subtle sympathy between the brain and the hand, resulting in great delicacy of manipulation. Much skill is required, too, in carrying the races evenly into succeeding lengths of the cloth, so that the new points of departure shall be imperceptible. This is called the "setting in." In spite, however, of the care that is exercised, the cloth is sometimes punctured, or the knife turned aside, it may be by some fragment of vegetable or other matter which has clung to the yarn, and escaped all the many processes of cleansing to which the cotton has been subjected.

The cutting to which our piece of velveteen is subjected is of the plain kind, but we may, if we please, pass from it and see some of a fancy description. Here, for instance, is a piece being cut into rib form resembling corduroy. In this case we are told that the knife has to be used in a special manner so as to raise this rib-like pile, and we hear of those mysterious "towart" and "frowart" movements, which terms, when interpreted, seem to mean the bringing of the knife to one side or the other in its progress along the cloth. The cutters are all indispensable persons, of course, in the work they have to do; but the central figure in a cutting room of this kind is the knife grinder, who is a specialist in his way. He and his grindstone are readily distinguishable, and to him from time to time must all the workers come to have their knives sharpened. These visits, roughly speaking, should be made hourly, inasmuch as a well-sharpened knife should retain sufficient edge for an hour, the time required to cut a two-yard length. Before another length is commenced the cutter goes to get the knife ground. It is interesting to see how skilfully the grinder or "tooler," as he is called, deals with the knife, applying the edge apparently point-on to the revolving stone, the blade bending like paper in the deft and rapid movement. The evidence of the required sharpness of the knife is found in the black appearance of the edge of the blade; if it shews grey it is not sufficiently sharpened.



CUTTING VELVETEEN BY MACHINERY.

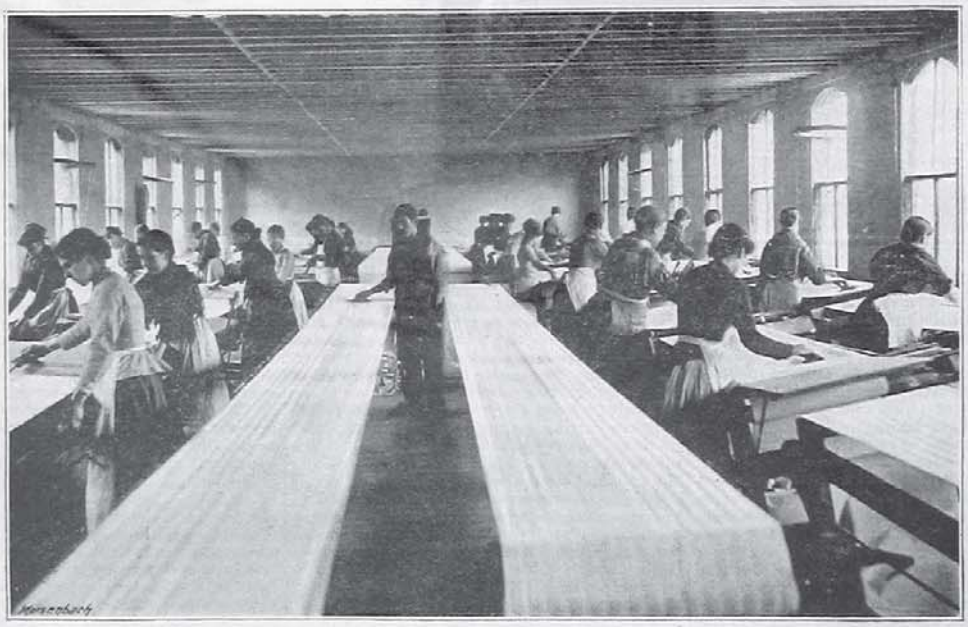
Having seen the process of velveteen cutting by hand, it will now be interesting to turn to another and mechanical method of accomplishing the same purpose. Many attempts have been made to invent a machine which will raise the pile upon cloth as effectually as it is done by hand, but the majority of these efforts have been unsuccessful by reason of difficulties, the nature of which it is not necessary to dwell upon here. For one, at least, of these efforts success is claimed, and considerable interest is being manifested in the working of the machine, which we are permitted to inspect, and an outline sketch of which is here given by way of illustration. The construction of the machine cannot be described in detail, but the first thing that arrests the attention of the outsider



CUTTING VELVETEEN BY HAND—*Short Frame.*

is the fact that, instead of the knife travelling along the fixed and stretched out cloth, as in the old system, it is the cloth that is travelling towards the knife, the latter remaining stationary in the process of cutting. The contrivances which go to make up the machine in the bulk of it, seem to have been designed to make provision for vibration in the cutting of a straight race, and for possible puncturing of the cloth, which, considering the rapidity of the process, might easily become serious.

If we examine the knife and its adjustment, we may get some idea of the way in which these difficulties have been met. It is sheathed at the point as in the old style, but here the resemblance ends. Instead of a bar of sharpened steel, placed in a wooden handle, we have a framework of metal, which appears heavy, but, being made of aluminium, is in reality very light. This framework contains some complex mechanical arrangements, including an air piston, and the guide end of the knife being hinged, the effect of this arrangement is to throw the knife out of gear immediately any obstacle presents itself in the cutting. The air piston performs its work in producing this result, and we are shewn the way in which the hinged portion of the knife is suddenly thrown backward when the pressure of obstruction is brought to bear upon it. To allow for vibration, the knife is attached to, and within the rim of a steel plate reaching across the machine. This plate has a sliding movement which is in sympathy with, and dependent upon that of the knife. As we watch the machine in operation we see the attendant fix the knife in the race of the cloth, which is then set in motion, and moves beyond the knife until the whole length has been cut; then the machine is stopped, and a reverse motion is made which takes the cloth back to its original position, from which it moves forward again. In this machine-cutting, of course, the object is to accomplish more work within a given time than can be done by



CUTTING VELVETEEN BY HAND—*Long Frame.*

accomplish this power of dealing with the cloth under immediate and delicate control. This is accomplished by the attendant cutter, who sits on a raised platform on the side of the machine, and at a point where she can deal with the knife. The latter is perhaps the most important part of the invention, inasmuch as the chief difficulty of machine cutting would appear to be that of producing a cutting instrument which should do its work effectively without the sympathetic aid of the human hand. The chief difficulties seem to have been to

hand, so instead of a two-yard length of cloth we have one measuring fourteen yards brought under the influence of the knife. We are further told that the cloth travels at the rate of 2,000 feet in a minute, that fourteen races of fourteen yards each can be cut in that minute, and that the average cutting done by the machine is ten yards per hour, as compared with two done in the same time by hand.

(To be continued.)

MR. HOLT HALLETT, DR. BAHADURJI, AND INDIAN MILL-OPERATIVES.

The following article, copied from the *Din Bandhu*, a native newspaper published in Bombay, and "devoted to the interests of the working classes," is in continuation of an article on the above subject which appeared in a previous number of that journal, and which was reprinted in *The Textile Mercury* of November 28th, 1891:—

The statement made by Dr. Bahadurji with regard to ventilation is also untrue. It is plain that the chawl room occupied by the operatives does not admit light, air, etc. as it should. Attempt has been made to throw the fault at the door of the poor operative. And who will not take an advantage of his ignorance? Dr. Bahadurji says "means for ventilation exist (of course in mills), but are not properly utilised owing to the habits of the operatives themselves. It is a peculiar habit with the Indian operative that he *will shut* the windows when he can. He will have any amount of heat but no draught . . . . . It is common experience to find servants preferring to sleep out on the verandah to indoors with windows open, etc." We know well that "means for ventilation exist but are not properly utilised, certainly not owing to the habits of the operatives, but in order to save the yarn from constant breakage. It is next to impossible that he can bear any amount of heat. The doctor must himself know that. And that is why the operative will always be seen with little clothing about his person. It is a common habit with the operative that he will always prefer to sleep out on the verandah to indoors. This shews that he has a liking for ventilation. That he has no dread for draught is also a fact. Dr. Bahadurji has said that there is only one entrance to the chawl room to admit light, air, etc., but later on he speaks about windows and shutters. This is far from consistent. Perhaps it may be the common experience of the doctor to find the servants (more probably his own) preferring to sleep out on the verandah to indoors with windows open; such servants are well fitted to be candidates for Bedlam if they are actually in the habit of doing so, but our experience is quite the contrary.

We doubt not whosoever will go through Dr. Bahadurji's statements carefully, will not fail to mark that our poor Indian operative does not get sound sleep. We quote here a portion of the same. The doctor says "the mill-hand rises early—so does his whole household men, women, and children, and prepares himself to start for his mill, which perhaps is a mile or two from his chawl. The Indian climate makes his walk to the mill pleasant if anything, and he is all the better for his little fresh air exercise . . . . . On reaching home he goes through his necessary ablutions and partakes of his evening meal, then he amuses himself by chatting with his friends and neighbours, or more often joins in the musical tom-tom party, which does not break up till midnight." It is evident then, unless he gets up at about 3-30 a.m. or 4 a.m, he will never be able to attend the mill, which is pretty far off from his chawl, in time. It is very easy to guess how many hours he must have been sleeping. At all events it is a fact that he does not get proper sleep. And we do not see how such a man can be healthy. It is a question for medical men to decide, and we leave it, therefore, to the learned Professor of Medicine for consideration.

We have not the slightest hesitation to say that "the Indian climate makes his walk to the mill pleasant if anything, and he is all the better for his little fresh air exercise." It might be true of Summer, but certainly not of Autumn and Winter when he must be all the worse for the showers of rain and draught, and according to Dr. Bahadurji, "the latter he dreads so much that he will shut all the windows as a precautionary measure." Then what precautions does he take during those seasons? It is next to impossible that such a person will ever dare to expose himself to the clemency of the weather of his own free will.

With regard to the physical condition of the operative the doctor is pleased to give his own experience. He says: "In the J. J. Hospital, the largest hospital in Bombay, where all classes of labourers amongst other people are admitted, I have not had to treat a single mill-hand as a physician within a period of three years." It may be true since the operative will never care to be under medical treatment owing to some of the following and other reasons. In the first place he has no liking for English medicine, because many of them know simple cures for some of the common ailments, having been brought up in the midst of the konkon herbs. Secondly, he will never consent to be under medical treatment for months together in the hospitals. Thirdly, as soon as he sees that the *country medicine* fails to produce any beneficial effect on him he will at once resolve to go to his *mulook* for change of air, etc. It is remarkably true that when these people return from their native country after a sojourn of two or three months generally, they seem to be very much improved by breathing free air which unhappily they do not get in our mills. So much for Dr. Bahadurji's reply. We now wish to consider as briefly as we can the letter of Dr. Bahadurji to the London *Times*.

THERE have been various indications that 1891 proved a relatively better year to the German linen industries than to the cotton industries of Germany. The directors of the Joint-stock Flax Spinning and Bleaching Company of Röhrsdorf, formerly Renner and Co., have now proposed a dividend at the rate of 7½ per cent. for last year, against 6½ per cent. for 1889.

SEVERAL changes of importance have taken place in quotations for woollens intended for shipment during the past twelve months. Spanish stripes are 1¼d. per yard cheaper than was the case at the beginning of 1891, and there has been a reduction varying from 6d. to 1s. 6d. per piece in the prices of camlets and lastings. For black Orleans, 26 in. wide, current quotations are 3$\frac{15}{16}$d., fine descriptions being 7¾d. 27 in. alpaca lustres range from 7$\frac{3}{8}$d. to 1s. 0$\frac{3}{8}$d. The foreign demand generally is very dull just now, but prices are firmer than was the case a short time ago.

THE Presidency magistrate of Calcutta has just decided a trade mark case in which Messrs. Ralli Bros. charged one Gopal Dass Kettry with infringing their trade mark, the "serpent circle," known in India as a bangle or kurra, the ends being serpents' heads. The evidence proved that the prisoner had contracted with Messrs. Gisborne and Co. for nine bales of dhooties to be shipped to him, and had furnished that firm with the marks to be put upon them, which was a bangle or kurra, but with elephants' heads at the ends, and a motto very like, in appearance, that upon the plaintiffs' goods. The magistrate inflicted a fine of 500 rs.

THE silk manufacturers of Broussa have forwarded the following petition to the Turkish Government:—"The French Government having decided to give premiums to silk manufacturers in France, several of these will find it advantageous to establish new silk factories in France, which, by entering into competition with those in Broussa, will undoubtedly cause them serious prejudice, and finally compel the owners to close their factories. With a view of obviating the evil consequences apprehended for the local manufacturers from the measures taken in France to favour the silk industry, the petitioners beg the Imperial Government to prohibit the export of cocoons from the province of Broussa."

THE ADULTERATION OF COTTON IN BOMBAY.—The Bombay Chamber of Commerce has issued a lengthy and interesting statement by way of reply to a memorandum by Mr. James, of the Bombay Civil Service, regarding alleged frauds in the cotton trade of Bombay and deterioration of the staple. The Chamber is entirely opposed to Mr. James's conclusion that legislation or Government interference of any kind is necessary. There is no doubt, the statement says, that the practice of mixing different growths of cottons for shipment has increased and reached a culminating point in 1890, but it denies that this is due to the fraudulent initiative of Bombay dealers or shippers. It is due solely to the desire of the European spinner for cheapness, and the practice has reached its present dimensions by "the continued demand on the part of consumers for cheaper and ever cheaper cotton, even at the risk of quality." The Chamber then enters into a history of the Bombay cotton trade since the commencement of the American Civil War, and describes the origin and operation of the Cotton Frauds Act and the reasons for its ultimate abolition. The real question now at issue is whether legislation of a similar character, though, perhaps, more stringent, should not be introduced now in the interest of the ryots and of the country at large, and on this the Chamber is quite decided. Mr. James's proposals for penal legislation are, it says, undesirable and unnecessary, and are likely to be impracticable; for, as all the three processes of picking, ginning, and pressing are, as a rule, going on simultaneously, it would be impossible, except with a perfect army of officials, to effectually supervise them. "In the opinion of the committee, the proposed system would inevitably fall back in a very short time into the same state as the old Cotton Frauds Department, with many of its more objectionable features intensified and multiplied by the more extended functions which the new scheme would propose to perform. Under the old Act it was found that the actual fees levied were but a small portion of the tax as compared with the obstruction to trade, and if this proved to be the case when up-country cotton buying was, comparatively speaking, in its infancy, it is not difficult to form some idea of what the result would be with the ginning and pressing factories, multiplied, as they are, over the length and breadth of the country, and even the very markets trebled in number."

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

The Liverpool market during the past week has presented a very instructive spectacle to disinterested observers. The weight of cotton now lying there, and its prospective early increase, told steadily on prices from the first portion, and spot descriptions were severely depressed, without shewing much ability to recover a fraction of the value lost. The more mercurial department of futures has shewn violent fluctuations, which may be taken as evidence of the desperate struggle those who are carrying burdens of this class of cotton are making to shoulder the responsibility of declining values upon the spinning section of the trade if possible. Unfortunately, the gregarious tendencies of cotton buyers representing spinners and limited companies leads them to lend themselves far too readily to the manipulations of persons making these efforts. The result is that futures have fluctuated violently almost daily in a range extending over 6 to 7 points. The effect has been that business has been exceedingly difficult to conduct in Manchester, which can only re-act disastrously upon Liverpool. If the latter could but bring itself into a calm mood, and permit the market to remain moderately steady for a week, it is quite probable that such an amount of business would be developed as would at least prevent the further descent of prices, and might even lead to a quiet and steady increment of values. Instead of that every effort has been put forth to gerrymander the market and bring about a condition that it will prove impossible to maintain. These efforts, it would appear from the proceedings of the past day or two, have met with an unexpected though much hoped-for measure of success, and the market has been properly rigged. As a consequence an advance of ⅛d. in spots has been made, though we fail to see the justification when the prices of futures have only advanced 1 to 2 points on those of Saturday last. All this excitement appears to have been begotten of the once more predicted falling-off of the crop movements for a couple of days, from which it is desired that the inference shall be drawn that scarcity, if not famine, is almost at our doors. The great thing for spinners to do is to keep their eyes firmly fixed upon the abundant store in Liverpool, and the accretions that are likely to be made to it from that of the other side. Doing this they may fairly disregard any figures of deliveries of cotton from the present invisible stores beyond. Neither need they trouble themselves about crop estimates as long as they have the abundant store before them. These estimates nearly all emanate from those who have cotton to sell, and for such it must be a difficult matter not to bring out the figures as they desire them.

COTTON.—On Saturday the tone improved in the Liverpool market, and spots steadied somewhat all round. Futures were active and steadily improved until the close, when an advance of 4½ to 6½ points was recorded. On Monday everything was changed. There was no response in the Transatlantic markets, and so Liverpool suffered a collapse. There was a fair demand for Americans, but holders offered freely and accepted easier rates. Other sorts were unaltered. Futures opened 2½ points lower, and quietly declined until they closed 4½ to 5 points down. On Tuesday the market was again weak, and American was freely offered by holders, considerable irregularity arising in consequence. The demand for Egyptians improved, yielding a fair business at current prices. Other sorts were quiet and unchanged. Futures were again weak and declined almost uninterruptedly from the opening to the close, the loss being 3½ to 4½ points on the day. On Wednesday an active demand prevailed for spots, and prices steadied considerably. Buyers often found values from $\frac{3}{32}$d. to $\frac{1}{16}$d. against them compared with the low rates of the previous day. Futures opened better and steadily improved until at the close an advance of 5½ to 6½ points was recorded. Yesterday the improvement was kept up, and spots advanced ⅛d. Brazilians, Pernams, and Paraiba declined $\frac{1}{32}$d. Egyptian was in good request at steady rates,

whilst Surats were quiet. Futures opened with an advance of 5 to 6 points, which was maintained; but, subsequently, a portion was lost the market closing with only 2½ to 3 points advance.

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

	Import.	Forward.	Sales.	Stock.	Actual Export.
American	132,707..	56,587..	56,020	1,306,840..	4,985
Brazilian ..	289..	617..	750..	40,370..	—
Egyptian ..	14,279..	5,041..	4,320..	123,620..	273
West Indian	199..	516..	400..	23,480..	80
East Indian	974..	823..	1,520 ..	51,280..	618
Total ..	148,448..	63,584..	63,010	1,545,590..	5,956

The following are the official quotations:—

	G.O.	L.M.	Md.	G.M.	M.F.
American.....	3¼ ..	3 13/16 ..	4 5/8 ..	4 7/16 ..	4 3/16
			M.F.	Fair.	G.F.
Pernam.....			4 7/16 ..	4 13/16 ..	5 1/16
Ceara			4 5/8 ..	4 5/8 ..	4 7/8
Paraiba			4 3/8 ..	4 5/8 ..	5
Maranham			4½ ..	4¾ ..	5
			Fr. G.F.	F.G.F.	Gd.
Egyptian			4 3/16	4 11/16	4 15/16	5¼
Ditto white			4 7/8*	5*	—	5 3/8*
	Fr. F.F.	G.F.	F.G.	F.G.	Gd.	F.G.	Fine.
M.G. Broach ..	— —	—	—	3 5/8	3¾	4
Dholleral	3 1/16 3 3/16	3 5/16	3 7/16	3 5/8	3 13/16	3 15/16*
Oomra	3 1/8* 3¼	3 3/8	3½	3 5/8	3¾	3 15/16*
Bengal	— —	2 15/16*	3 1/16*	3¼	3 7/16	3 11/16
Tinnivelly	3 3/16* —	3 5/8	3 7/8	4 1/16	—	—

* Nominal.

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.

	Saturday.	Monday.	Tuesday.	Wednesday.	Thursday	Friday
January.	3-63 4 o	3-61 v	3-56 b	3-61 s	4-3 4	3-62 63
Jan.-Feb	3-63 4 o	3-61 v	3-56 b	3-61 s	4-3 4	3-62 63
Feb.-Mar..	4-2 b	3-63 v	3-58 b	3-62 63	4-4 5	3-63 4d
Mar.-April	4-5 6	4-2 3	3-61 62	4-1 2	4-8 s	4-3 s
April-May	4-9 s	4-6 s	4-1 s	4-5 s	4-11 12	4-6
May-June..	4-12 13	4-9 b	4-4 b	4-8 9	4-15 s	4-9 10
June-July..	4-16 s	4-12 b	4-7 b	4-11 12	4-18 b	4-12 13
July-Aug..	4-19 s	4-15 b	4-10 11	4-15 s	4-21 22	4-15 16
Aug.-Sept.	4-21 v	4-17 18	4-12 13	4-17 b	4-24 s	4-18 s
Sept.-Oct..	—	4-20	—	—	—	—
Oct.-Nov. .	—	4-22	—	—	—	—
Price of Mid. American.	4	4	4	4	4 1/16	4 1-16
Estimated Sales including Spec. and Export.	10,000	10,000	10,000	15,000	14,000	10,000
	1,000	1,000	2,500	4,000	2,000	1,500

YARNS.—On Saturday last yarns exhibited no improvement, and a retrospect of the week afforded no satisfaction, the turnover having been mainly of a retail character. The collapse in Liverpool on Monday put a damper upon any excitement that might have had a tendency to shew itself as springing from the spurt in that market made on Saturday. Buyers for both home and shipping account shewed little disposition to increase the weight of their operations, though, owing to some irregularities in price, temptations were placed before them. On Tuesday spinners were strongly *en évidence*, but, notwithstanding their evident desire to sell and be somewhat accommodating in price to buyers who would take prompt delivery, they were not greatly tempted. The result of the day's business was not large, and prices accepted were unprecedentedly low. It was difficult to find any traces of improvement amongst buyers in our market on Wednesday in consequence of the spurt Liverpool put on; the enquiries were few and the sales light. Prices were, however, somewhat steadier. The continuance of the movement yesterday led to some placing of orders hitherto held in reserve, and a fair amount was put down at a slight improvement upon the lowest of the irregular prices lately to be met with.

CLOTH.—There was scarcely any attempt to do business in cloth on Saturday last. The week's business summed up rather badly both in amount and quality of prices. There was little business offering in cloth on Monday, the drooping state of cotton causing buyers to hold off. There seemed to be business in the market for both China and Calcutta, but there is no great urgency to place it in the unsettled state of cotton prices. Manufacturers' experience on Tuesday was not of a very satisfactory character, for though, as for some time past, a fair amount of enquiry was met with, it yielded little result. Disturbing rumours affecting the Levant trade also pervaded the market, and did not tend to improve matters. The bulk of the practicable enquiry, as before, mainly came from China and Calcutta. On Wednesday manufacturers did not seem much perturbed about the activity of Liverpool, or to dread its effect upon the prices of yarn. Had business offered at all of a satisfactory character it would not have been repudiated. The continuance of the activity in cotton yesterday brought forth more enquiries, and where makers were fairly easy to treat with business was secured. All round, as a matter of precaution, prices were safeguarded by advances.

To-day Liverpool has again lost spirit, and prices are weaker in both departments. Yarns are slower, and the tendency towards an increase of business is again subsiding.

WOOLLENS AND WORSTEDS.

BRADFORD.—Spinners still consider wool prices high, and refuse to give the prices asked by staplers. Cross-breds are rather dearer. Mohairs and alpacas do not display much activity. Spinning machinery is fairly well engaged, although there is room for an improvement in the demand. For shipment there is a moderately active enquiry, and home-trade buyers keep operating. The prices asked by spinners are considered high by many. Worsted coatings are moving off with greater freedom, and prices generally are steady. The American trade is flat.

ROCHDALE.—Glasgow houses have operated to a small extent, but trade generally has not opened out thoroughly, purchases being of a hand-to-mouth character. Stocks at the mills are said to be rather low, a circumstance most unusual at this time of the year.

LEICESTER.—Prices keep steady, although the demand is not large. Such purchases as are being made by spinners are of a hand-to-mouth character. Long-skin wools are enquired for, but short descriptions are slow. Cross-bred and Botany sorts are steady, and quotations remain firm. Yarns are well enquired for, and prices keep steady. Hosiery orders are coming in plentifully, and the prospects point to a satisfactory spring season. For cords, braids, and other smallwares, excepting webbings, the enquiry is fair.

HUDDERSFIELD.—The demand still keeps quiet in all branches of the woollen trade. Spring orders do not come in freely, and the general trade is insufficient to keep machinery fully employed. Serges, vicunas, and fancy worsteds keep to the front, both in the home and foreign markets, but the number of looms running on cheap goods has fallen off greatly. The Colne Valley trade is very dull.

LEEDS.—Business is brisker this week, and the general feeling is one of greater confidence. Winter goods moved off with some freedom on Tuesday. Superior grades of fancy worsteds have been in more active request, but the prices obtainable are not regarded as sufficiently high. United States buyers are not operating freely, and this is a disturbing element in the situation. For meltons, cheviots, and fancy tweeds the market is becoming more satisfactory, and prices remain as before. The ready-made clothing factories are pushing forward spring preparations, as well as more rapidly than hitherto clearing out old winter stock.

GLASGOW.—Messrs. R. Ramsey and Co., wool brokers, in their report dated 12th January, 1892, say—*Wool*: The wool market has scarcely yet recovered itself since the holidays. Machinery has been standing, and is only now getting into operation again. A series of public sales is being held in Leith this week and the next. Glasgow sales are fixed for February 3rd. The market is characterised by a better feeling, but no increase of business so far. *Skeep-skins*: The supply has been liberal, and many lots of prime quality. Competition has been moderately active, especially on the crack lots; otherwise there is not much change in prices.

FLAX AND JUTE.

DUNDEE, WEDNESDAY.—The market is dearer and excited. Jute has risen from £12 per ton to £19 10s. During the past few days it has advanced from 5s. to 10s. every day, and a large business is doing. The effect of this upon yarns is to cause most spinners to withdraw, in the meantime, all offers. Prices are quoted to-day, say, cops in 8 lb. done at 1s. 6d. a week ago are sold at 1s. 8d., and warps done at 1s. 8d. are sold at 1s. 10d. The other kinds in proportion. Jute cloth also partakes in the rise, but even yet buyers are sceptical of the future. The whole movement has originated in the jute market. The demand from New York is languid. For one thing the season is past, but the telegrams from this side have at length awakened New York buyers to the fact that goods can no longer be bought here to replace the stocks held there except at a big advance. Common Hessian is quoted to-day at 2¾d per yard, and some makers refuse to name less than 2½d. for common 10½oz. 40in. Dundee Hessian. The finer sorts are held for even a greater rise. The flax market still remains undisturbed in all this excitement. For K of really trustworthy shipment £18 is paid; while for common sorts £16 10s. to £17 is the price. Fine tows are more enquired for, and the feeling grows that these have touched the bottom. Linen yarns are decidedly dearer this week, and one can now quote a rise of, say, 1d. per spyndle from the very bottom on good warp. Tow yarns are also a shade better in value, especially the better spins of warp. There is no change in linen goods, but makers are very firm in standing to their list prices. Dundee fancy goods are quiet. The best makers have offers of business, but the immense advance on the price of jute makes them cautious in entering forward orders. In twines and cords one hears of advancing quotations. This begins to be an important and extending branch of the jute industry.

Thursday: Jute market violently excited, prices up 5 per cent. since Tuesday; buyers over.

HOSIERY AND LACE.

NOTTINGHAM.—Some of the shipping orders now being received are satisfactory, although the lace trade generally shews little change, the home trade being almost lifeless. Novelties in fancy laces have been brought out, but if buyers do not in the future give more encouragement than they appear disposed to grant at present, it is unlikely that manufacturers will feel encouraged to proceed with the origination of further novelties. Common laces for sorting purposes meet with a small enquiry. Better makes of Valenciennes are bought, and point of Paris lace is also to the front. Embroidery trimmings are to the front in certain styles. Edelweiss, though enquired for, is rather slow of sale. The silk lace trade shews few, if any, changes of importance. Lace curtains and window blinds are dull. Plain cotton nets are steady. In hosiery, black and coloured cashmeres are moving off steadily, but other varieties are quiet.

DRY GOODS.

MANCHESTER.—The warehouses on Tuesday were not visited by a large number of buyers, and Thursday was also quiet, customers from the outside districts being detained owing to the snow-fall. Merchants themselves hope to reap benefit shortly from the low price at which cotton is now selling, but so far there is, of course, no change in quotations of standard makes, such as are consumed in the home trade. The Swiss embroidered handkerchief trade continues to maintain the appearance of activity, the commencement of which some time ago caused such anxiety to producers of hand-embroidered goods. History, as seen in the downfall of the West of Scotland and the North of Ireland sewed muslin trade, through the competition of the Swiss embroidery machine, appears about to repeat itself in relation to the hand-embroidered handkerchief trade. Irish sellers of hand-embroidered goods, finding that the Swiss articles have obtained such a strong footing, have taken to them, sending the cloth to Switzerland to have it embroidered, and having it returned to this country to be finished. Some fine patterns of tweeds are now being shewn, and for serges ready-made clothiers provide a satisfactory outlet. Checks, stripes, and fancies are frequently seen in mantle cloaks, for which home-spun effects are also used.

Tariff News.

THE NEW FRENCH TARIFF ON YORKSHIRE GOODS.

Below we are able to give a copy of the tariff on woollen and worsted yarns and cloth, as finally voted by the French Senate and Chamber of Deputies. The rates are in francs per 100 kilos., the first column representing the general tariff and the second the minimum rates:—

YARNS.

SINGLE WORSTED YARNS, BLEACHED OR UNBLEACHED.

Below 40,500 metres per kilo...			43	..	28
From 40,500	to	50,500.....	56	..	36
,, 50,500	to	60,500.....	68	..	44
,, 60,500	to	70,500.....	81	..	52
,, 70,500	to	80,500.....	93	..	60
,, 80,500	to	90,500.....	105	..	68
,, 90,500	to	100,500.....	118	..	76
Over 100,500.....			124	..	80

SINGLE WOOLLEN YARNS, BLEACHED OR UNBLEACHED.

Below 10,000....		.....	18·50		15
From 10,000	to	15,000.....	28	..	22
,, 15,000	to	20,000.....	37	..	30
,, 20,000	to	30,500.....	46	..	37
Over 30,500.....			56	..	45

SINGLE WORSTED YARNS, DYED.

Below 40,500 metres per kilo...	74	..	53
From 40,500 to 50,500.....	87	..	61
,, 50,500 to 60,500.....	99	..	69
,, 60,500 to 70,500.....	112	..	77
,, 70,500 to 80,500.....	124	..	85
,, 80,500 to 90,500.....	136	..	93
,, 90,500 to 100,500.....	149	..	101
Over 100,500.....	155	..	105

SINGLE WOOLLEN YARNS, DYED.

Under 10,000 metres	50	..	37
From 10,000 to 15,000.. ..	59	..	43
,, 15,000 to 20,000.....	68	..	49
,, 20,000 to 30,500.....	77	..	54
Over 30,500.....	87	..	61

DOUBLED WORSTED YARN, BLEACHED OR UNBLEACHED.

Below 40,500	56	..	34
From 40,500 to 50,500.....	72	..	44
,, 50,500 to 60,500.....	88	..	53
,, 60,500 to 70,500.....	104	..	63
,, 70,500 to 80,500.....	120	..	72
,, 80,500 to 90,500.....	136	..	82
,, 90,500 to 100,500.....	152	..	92
Under 100,500.....	161	..	96

DOUBLED WOOLLEN YARN BLEACHED OR UNBLEACHED.

Below 10,000	28	..	18
From 10,000 to 15,000	37	..	27
,, 15,000 to 20,000	46	..	36
,, 20,000 to 30,500	56	..	44
Over 30,500	65	..	54

DOUBLED WORSTED YARNS, DYED.

Below 40,500	87	..	59
From 40,500 to 50,500	99	..	68
,, 50,500 to 60,500	112	..	78
,, 60,500 to 70,500	124	..	87
,, 70,500 to 80,500	138	..	97
,, 80,500 to 90,500	152	..	100
,, 90,500 to 100,500	166	..	116
Over 100,500.....	174	..	121

DOUBLED WOOLLEN YARNS, DYED.

Below 10,000.....	59	..	40
From 10,000 to 15,000.....	68	..	47
,, 15,000 to 20,000.....	77	..	54
,, 20,000 to 30,500.....	87	..	60
Over 30,500.....	96	..	68

DOUBLED WORSTED YARNS FOR TAPESTRY, BLEACHED OR UNBLEACHED.

Below 40,500.....	65	..	42
From 40,500 to 50,500.....	84	..	54
,, 50,500 to 60,500.....	102	..	66
,, 60,500 to 70,500.....	121	..	78
,, 70,500 to 80,500.....	139	..	90
,, 80,500 to 90,500.....	158	..	102
,, 90,500 to 100,500.....	177	..	114
Over 100,500.....	186	..	120

DOUBLED WORSTED YARN FOR TAPESTRY, DYED.

Below 40,500	96	..	67
From 40,500 to 50,500.....	115	..	79
,, 50,500 to 60,500.....	133	..	91
,, 60,500 to 70,500.....	152	..	103
,, 70,500 to 80,500.....	170	..	115
,, 80,500 to 90,500.....	189	..	127
,, 90,500 to 100,500.....	208	..	139
Over 100,500.....	217	..	145
On Alpaca, Vigonia, and other yarns, pure or mixed, the rates are the same as for pure woollen yarns.			
MOHAIR YARNS.....	Free.		

MOHAIR YARNS, PURE OR MIXED.

[Mohair predominating in weight]	15	..	12

CLOTH.

ALL-WOOL GOODS.

FURNITURE STUFFS, weighing over 400 grammes per sq. mtr..	124	..	100
MOIRE	75	..	50
COSTUME CLOTHS, weighing not over 250 gr. per sq. metre ..	211	..	140
ALL-WOOL GOODS, of whatever kind, weighing per sq. metre:			
251 to 400 grammes.....	270	..	220
401 to 550 ,, ...	230	..	180
551 to 700 ,, ...	190	..	140
Over 700 ,, ...	140	..	110

MOQUETTE CARPETS.

Brussels	80	..	55
Velvet.....	100	..	70
Persian	200	..	86
Jacquard.....	124	..	80
Others.....	124	..	80
PASSEMENTERIE and RIBBONS	248	..	200
FEZ and RED CAPS (each)	½	..	3/5 100
TAPESTRY	620	..	500
SHAWLS, except Indian Cashmeres and Hosiery	397	..	320
FURNITURE VELVETS	300	..	223
SEAMLESS BOLTING CLOTH ...	198	..	160
BLANKETS.....	87	..	55
MIXED GOODS, Casimirs, and other fulled cloths, cotton warp; unfulled napless goods, with cotton warp, wool predominating in weight; weighing per square metre:—			
Not over 200 grammes.....	211	..	150
From 201 to 300	174	..	125
,, 301 to 400	136	..	100
,, 401 to 550	99	..	75
,, 551 to 700	74	..	60
Over 700	50	..	45
CLOTHS containing over 10 per cent. of pure or spun silk yarn in the warp, wool predominating	297	..	240
SERGE DE BERRI	180	..	150
CLOTHS, with all-silk warp....	400	..	300
MOHAIRS, pure or mixed, astrachans, plushes, and seals..	230	..	180

Gazette News.

PARTNERSHIPS DISSOLVED.

Noton, J., and Higginbotham, W., yarn agents and merchants, Cannon-street, Manchester, as regards J. Noton.

Lumb, J., and Greenwood, J., mechanical engineers, Leeds.

Anderson, T. W., and Seanor, C. R., cloth merchants, Leeds.

Holden, W. and R., cotton manufacturers, Clitheroe, as regards W. Holden.

Marsland, G. and W., rag merchants, Leeds, as regards G. Marsland.

Ducroz, C. G., Edenborough, C., Elder, F., and Doxat, F. R., wool brokers, Moorgate-street buildings, London.

Hirst, G. M. and W., and Talbot, A., trading as the Alexandra Mill Company, Batley.

Hirst, J. N., B., and W., woollen cloth manufacturers, Batley, as regards W. Hirst.

Hindle, J. and T. and Jonas and John, jun., trading as E. Briggs and Company, cotton manufacturers, Blackburn and Padiham, as regards T. and Jonas and John Hindle, jun.

Bartlett, J. D., and Gladstone, A., merchants, Peterstreet, Manchester, as regards A. Gladstone.

Sutton, G. W., and Moore, W., stuff and woollen merchants, Bradford, as regards W. Moore.

Patents.

SPECIFICATIONS PUBLISHED.

1890.

2,102 BARKER. Lamb knitting machines. 11d.
2,384 CARTWRIGHT. Knitting machines. 11d.
2,400 KERR and others. Driving and carrying belts. 6d.
2,703 YEADON. Fringe or chenille. 8d.
2,772 PARK. Weaving pile fabrics. 8d.
2,805 LAKE (*Leonhardt and Co.*) Colouring matters. 4d.
2,818 IMRAY (*Farbwerke vormals Meister, Lucius and Brüning*). Azo colours. 6d.
2,978 CHAUX. Woven and knitted fabrics. 6d.
3,111 BAILEY. Rugs and pile fabrics. 11d.
3,439 WILLCOX (*Farbenfabriken. vorm. F. Bayer and Co.*) Azo dyes. 8d.
3,655 KERR and BERRIDGE. Stockings, etc. 8d.
5,934 BYWATER. Making felt. 6d.
16,188 ERNOTHER. Looms. 6d.
17,830 LAKE (*Grenier.*) Looms. 8d.
18,344 NUSSEY. Imitation seal skins. 4d.
19,659 SEMMLER. Knot for retiform fabrics. 6d.
19,945 CHAPMAN and HASKELL. Knitting machines. 11d.
16,981 HEATHER. Weaving check goods. 4d.
20,010 SCHAEFFER. Alizarin colours. 4d.

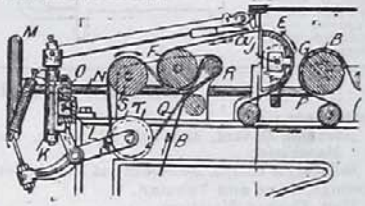
ABSTRACTS OF SPECIFICATIONS.

11,100. July 16, 1890. **Dyeing.** A. H. WARDLE, Churnet Dye Works, Leek, Staffordshire.

Hank machines.—Relates to machinery for dyeing hanks of silk and other yarn. Consists in a row of vessels containing different dye liquids, and over each vessel a spindle, for dipping hanks, is mounted on a crank disc fixed to a shaft. The first of the shafts is connected by bevels, with a shaft carrying a mangle wheel. This wheel is driven by a pinion on a driving shaft, mounted at one end in a slot. The crank discs are geared together directly. Rotary motion is given to the spindles by pinions gearing with spur wheels. A modified machine is described, in which there are two rows of dye vessels and a crank disc at each end of the shafts, each crank disc carrying two dipping spindles, which are not rotated. 1s. *Drawings.*

11,259. July 19, 1890. **Cutting pile.** C. W. and T. B. KEIGHLEY, and W. NETHERWOOD, all of Upperhead Mills, Huddersfield.

The endless fabric B passes over narrow plates or swells G on the back rail E_1 so that the parts where the knives *a* are cutting



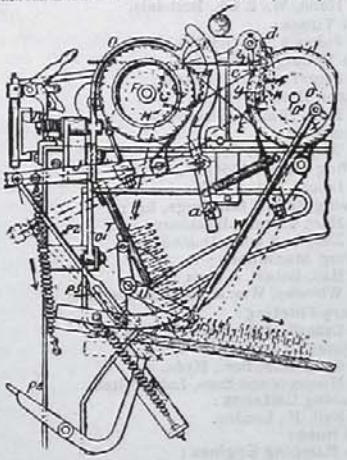
are in a greater state of tension than the intervening parts. Corresponding to these plates are travelling bands Q, passing over driving rollers R, S and under the taking-in or tension roller F. Tension is applied to the bands by pulleys T pivoted to brackets K. As the fabric contracts in width by stretching and cutting the pile, the plates G, knives *a*, and belts Q are traversed laterally by screws J, L of varying pitch which are operated simultaneously by gearing P, O from a shaft N and hand-wheel M. At the same time one of the brackets or guide-plates at the feeding end of the machine is shifted laterally by a screw of coarser pitch than the coarsest of the screws J, L. 8½d.

13,306. July 19, 1890. **Bleaching, dyeing, etc.** J. T. REID, Caledonian Works, Pendleton, and C. and A. EDMESTON, Cannon-street Works, Salford.

Relates to apparatus for piling textile piece goods in the full width or in rope form, or warps or yarns, into boxes after leaving machines, such as Bents, Edmeston, and Grether's Kier, in which one or more lengths of material are continuously washed, bleached, or dyed. Consists in a box divided into 12 or other suitable number of compartments, over which is a fixed frame, provided with antifriction rollers, for the longitudinal traversing thereon of a primary frame, by means of a screw shaft driven from a pulley. On this frame are mounted winches for delivering the ropes into the compartments of the box. To guides on the frame are also mounted rods provided with guide pegs, and receiving a transverse movement on the frame by the action of a screwed shaft. By these movements the material is uniformly and regularly piled in the compartments of the box. For piling fabrics in the width the transverse motion is dispensed with. 1s. *Drawings.*

11,353. July 21, 1890. **Cutting pile.** C. W. and T. B. KEIGHLEY and W. NETHERWOOD, all of Upperhead Mills, Huddersfield.

Machines for cutting the pile of woollen, cotton, velvet, or other corded fabrics, are stopped automatically by the thickened part connecting the ends of the fabric. When this part passes over the back rail E it lifts the lever K on the shaft *d*, and by means

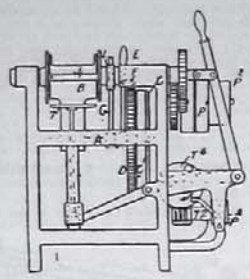


of the arms *e*, *f*, and vertical shaft *e* shifts the rod *i* from underneath the pawl *j*. The ratchet wheel M then oscillates the lever L and releases the catch *a*, which action allows the lever J to fall to the position shewn in dotted lines. This applies a brake I to the taking-in or tension roller F; and, by means of a slotted connecting rod P_2, applies also a brake I_1 to the card-covered letting-in roller D. At the same time the lever O_1 is released from contact with the lever J, and allows the belt fork O to be shifted by a spring *s* from the fast to the loose pulley H. The machine is re-started by lifting the lever J; but, by reason of the slot P_3 the brake I is released slightly before I_1 to allow the slack in the fabric to be taken up. The brake I_1 may also be released by a treadle P_4. At the end of each cut the fabric is shifted laterally by guides carried by a sliding rail, which is operated by a rack and pinion. At the end of the shaft D is a loose pulley driven by suitable rope gearing and having a rim or flange at one side. A fixed boss on the shaft carries gripping plates which engage with this rim when the roller D tends to

over-run. The fabric is assisted in its passage from the front of the machine to the back by an oscillating board T, operated by levers U and connecting rod W from the crank disc X. 1s.

11,415. July 22, 1890. **Spinning.** M. Firth, J. Knowles, J. Halstead, and J. Robertshaw, all of Bolton Woods Shed, Frizinghall, Bradford.

Balling slivers for combing machines.—The presser plate B, which takes on to the ball of fibre as it is being wound, is mounted on a shaft A which also carries a loose brake pulley C which is turned beneath its brake strap Cr as the presser plate rises by means of a ratchet and pawl arrangement D, F, E, the pawls F being carried by the arm E fixed to the shaft A. A lever G mounted loose on the shaft A, and carrying a pawl is oscillated at each revolution of the



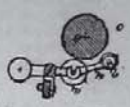
spindle shaft by a cam L the pawl travelling along a path prepared for it on the adjacent side of the lever E, which is in the form of a sector. When, however, the ball has attained a sufficient diameter, and the lever E has been moved sufficiently, the pawl drops into a notch in the lever, which at the next throw of the cam is moved suddenly forward and unlocks the belt-shifter, when the strap is transferred to the loose pulley P1. This movement of the belt-shifter causes, through a suitable lever system, the transference of a strap, which passes over a pulley P2 secured to the loose pulley P1, on to the fast pulley of the pair P4, thereby operating the worm gearing T3, T4, by which, through the operation of suitable levers, the spindle J is withdrawn from the ball of fibre, and the table 7 is raised to support the latter, the parts in returning to their normal position causing the strap to be transferred to the loose pulley of the pair P4. 8½d.

11,405. July 22, 1890. **Marking yarn and cloth.** W. C. Lovering, Taunton, Massachusetts, U.S.A.

For preventing embezzlement or waste of cloth the warp is provided at intervals with an extended and well-defined "cut-mark," so that, on weaving, a "cut-figure" is produced, through which the cloth is divided so as to leave a portion of such figure on each side of the line of division. The yarn is marked preferably during the sizing and drying operations in the slashing machine. The yarn is acted on between the squeezing rolls and the drying cylinder, by a printing roll in contact with an inking roll. These latter are driven by suitable gearing. An impression pad is carried by a shaft upon which a segment wheel is mounted. A catch prevents the rotation of the latter until lifted by the action of ordinary "clock" mechanism, whereupon the wheel rotates partly by gravity, and then engages with a pinion, and is carried round to produce the "cut-mark." Various forms of "cut-marks" are described. 8½d. *Drawings.*

11,421 July 22, 1890. **Looms.** W. Stokes, 42, Gardiner-street, New Brompton, Kent.

Take-up motion.—In looms for weaving tapes, ribbons, and similar narrow fabrics, each piece *c* is passed around rollers *l*, *i*, on a lever *k* (preferably counterbalanced) and around the sand roller *e*, in the manner shewn. The tension on the warp raises the lever and presses the roller *l* against the sand



beam, so that the tape, etc., is firmly gripped and is taken up with certainty. 8½d.

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

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

Bandings, Tape and Tubular:
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Belting:
Fleming, Thos., Son, & Co., Halifax.
Reddaway, F., and Co., Pendleton.
Rossendale Belting Co., Manchester.
Sampson and Co., Stroud.

Bobbins, Spools, Shuttles:
Dixon, John, & Son, Steeton, near Keighley.
Hall, Robert, & Sons, Bury.
Kay, John, Rochdale.
Livesey, Henry, Limited, Blackburn.
Wilson Brothers, Limited, Todmorden.

Boilers:
Fernihough, J., & Sons, Stalybridge.
Galloways, Limited, Manchester.

Braiding Machinery:
McGowan & Hadwen, Manchester.

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Hall, Robert, & Sons, Bury.
Hoyle, E., and Sons, Limited, Halifax.
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Card Clothing:
Sykes, Joseph, Brothers, Huddersfield.
Wilson & Ingham, Liversedge.

Card Grinding Machinery:
J. Jones, Dukinfield.

Cement, Mineral Fusible:
Fox and Williams, Manchester.

Chaining Machine:
Hurst, W., & Co., Rochdale.

Cop-Tubes:
Jagger & Co., Oldham.

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

Cotton Driving Ropes:
Hart, Thomas, Blackburn.

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

Doffing Comb Motion:
Brooks, Samuel, Manchester.

Driving Ropes, Bandings, &c.:
Hart, Thomas, Blackburn.
Kenyon & Sons, Dukinfield.

Drying Machinery:
Hall, Robert, & Sons, Bury.
Whiteley, Wm. & Sons, Huddersfield.

Emery Filleting:
Dronsfield Brothers, Oldham.

Engines:
Goodfellow, Ben., Hyde.
Musgrave and Sons, Ltd., Bolton.

Filtering Cisterns:
Nell, F., London.

Fire Hose:

Fire Pumping Engines:
Worthington Pumping Engine Co., London and Manchester.
Reddaway, F., & Co., Pendleton.

Fustian Cutting Machines:
Lockwood and Keighley, Huddersfield.

Humidifyers:
Howorth, Jas., & Co., Farnworth.
Matthews and Yates, Manchester.
Parsons, P., Blackburn.

Hydraulic Presses:
Dickinson, Wm., & Sons, Blackburn.
Hall, Robert, & Sons, Bury.
Livesey, Henry, Limited, Blackburn.

Hydro-Extractors:
Broadbent, Thomas, and Sons, Huddersfield.
Watson, Laidlaw & Co., Glasgow.

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

Jacquard and Card Cutting Machinery:
Ayrton, Wm., and Co., Manchester.
Devoge & Co., Manchester.
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Knitting Machinery:
Harrison, W., Manchester.
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Lattices, Pegs, Jacquard Slips, &c.:
Livesey, Henry, Limited, Blackburn.

Looms, etc.:
Butterworth and Dickinson, Burnley.
Dickinson, Wm., & Sons, Blackburn.
Hacking and Co., Bury.
Hall, Robert, and Sons, Bury.
Hutchinson, Hollingworth, and Co., Doboross, Oldham.
Livesey, Henry, Limited, Blackburn.
McGowan and Hadwen, Manchester.
Platt Brothers and Co., Limited, Oldham.
Tattersall & Holdsworth, Burnley.

Machinery (Bleaching, Dyeing, Printing, &c.):
Hawthorn, John, & Co., New Mills, Stockport.
Dickinson, Wm., & Sons, Blackburn.
Heppenstall, E., Huddersfield.
Hall, Robert, & Sons, Bury.
Mather and Platt, Manchester.
Riley, J. H., and Co., Bury.
Whiteley, Wm. & Sons, Huddersfield.

Machinery (Cotton Preparation, Spinning, Doubling, etc.):
Ayrton Wm., and Co., Manchester.
Bethel, J., Manchester.
Brooks, Samuel, Manchester.
Coulthard, T., & Co., Preston.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hetherington, John, and Sons, Manchester.
Hall, Robert, & Sons, Bury.
Horrocks, John, and Son, Manchester.
Howard and Bullough, Ltd., Accrington.
Lees, Asa, and Co., Limited, Oldham.
Lord Brothers, Todmorden.
Platt Brothers and Co., Limited, Oldham.
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Stubbs, Joseph, Manchester.
Tattersall & Holdsworth, Burnley.
Taylor, Lang and Co., Stalybridge.
Threlfall, Rd., Bolton.

Machinery (Flax, Tow, Jute, &c., Preparation and Spinning):
Fairbairn, Naylor, Macpherson & Co., Leeds.

Machinery (Thread):
Ayrton, Wm., and Co., Manchester.
Brooks, Samuel, Manchester.

Machinery (Silk):
Brooks, Samuel, Manchester.
Coulthard, T., & Co., Preston.
Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hall, Robert, & Sons, Bury.
Horrocks, John, and Son, Manchester.
McGowan and Hadwen, Manchester.
Platt, Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield.
Taylor, Lang and Co., Limited, Stalybridge.

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Machinery (Woollen and Worsted):
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Dobson & Barlow, Bolton.
Guest and Brookes, Manchester.
Hetherington, John, and Sons, Manchester.
Hall, Robert, & Sons, Bury.
Horrocks, Jno., and Son, Manchester.
Lees, Asa, and Co., Limited, Oldham.
Platt Brothers and Co., Limited, Oldham.
Stubbs, Joseph, Manchester.
Sykes, John, and Sons, Huddersfield.
Taylor, Lang and Co., Stalybridge.
Tattersall & Holdsworth, Burnley.
Whiteley, Wm., & Sons, Huddersfield.

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Wells, M. & Co., Manchester.

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Jagger & Co., Oldham.

Oilcloth Machinery:
Ayrton, Wm., and Co., Manchester.

Patent Agents:
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Picker Steepers:
Green, James, Blackburn.

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Lancaster and Tonge, Pendleton.

Pulleys:
Richards, Geo., and Co., Broadheath.
"Unbreakable" Pulley and Mill Gearing Co., Limited, Manchester.

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Meredith-Jones, J., and Sons, Wrexham.

Rust Preventives;
Wells, M., & Co., Manchester.

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

Shuttle Swells:
Hall, Robert, & Sons, Bury.
Livesey, Hy., & Co., Ltd., Blackburn.
Whalley, J., Blackburn.

Sizing and Filling Preparations:
Adley, Tolkien, and Co., Blackburn.
Eastwood, James, Manchester.

Smoke Consumers:
Automatic Smoke Prevention Syndicate, Ltd., Manchester.
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Sprinklers, Automatic:
Dowson, Taylor & Co., Ld., Manchester and London.
Witter & Son, Bolton and London.

Steam Traps:
Lancaster and Tonge, Pendleton.
Whiteley, Wm., & Sons, Huddersfield.
Crowley and Co., Ltd., Sheffield.

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Pickup, J. H., & Co., Ltd., Bury.

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Hall, Robert, & Sons, Bury.
Livesey, Henry, Limited, Blackburn.
Stott, J. H., Rochdale.
Whiteley, Wm., & Sons, Huddersfield.

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Jarmain & Son, Huddersfield.

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