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Abroad (this paper added): One year, 25 shillings; six months, seven shillings and sixpence; three months, four shillings.

Orders for alterations in current advertisements must reach the Manchester Office not later than Tuesday morning to receive attention the same week. Special advertisements will be inserted with all practicable regularity, but absolute regularity cannot be guaranteed.

NOTICE.

The Editorial and Publishing departments of *The Textile Mercury* have been removed from Strait-street, to larger premises in
CARR STREET, BLACKFRIARS, MANCHESTER,
where all communications should be addressed.

The Textile Mercury.

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INCORPORATION OF
"THE HOSIERY AND LACE TRADES REVIEW"
WITH "THE TEXTILE MERCURY."

The following circular letter has been sent to all the hosiery and lace manufacturers in the United Kingdom, and also to many abroad:—
Berridge-street Chambers,
Leicester, 23rd July, 1892.

Dear Sir,
We beg to inform you that we have sold the copyright of *The Hosiery and Lace Trades Review*, and the good-will of the business connected therewith, to Messrs. Marsden & Co., of Carr-street, Manchester, proprietors and publishers of the well-known and influential technical journal *The Textile Mercury*, which is the only weekly textile journal appearing in this country. Also that the *Hosiery and Lace Review* is now incorporated with *The Textile Mercury*, which journal thus becomes the acknowledged representative of the hosiery and lace industries, and will devote special attention to their interests.

We respectfully suggest, therefore, that you would do well to subscribe to *The Textile Mercury*, feeling assured that you will find in that journal a competent exponent and advocate of the interests of your important business.

We are, yours faithfully,
THE HOSIERY AND LACE TRADES REVIEW Co., Ltd.
(per Thos. S. Shearer, Secretary.)

We take much pleasure in this announcement of the incorporation of *The Hosiery and Lace Trades Review* with *The Textile Mercury*, and more particularly so because the incorporation is a *bona-fide* and not a sham one. When, about a couple of years ago, *The Textile Mercury* began to make its way among hosiery and lace manufacturers, one of its monthly would-be rivals attempted to steal a march upon it by incorporating with itself "The Hosiery and Lace"—this, that, or the other—"incorporating" an absolutely non-existent journal! And another textile publication followed on similar lines. We make no remarks upon the morality—or otherwise—of such a proceeding: our reply is the actual incorporation with *The Textile Mercury* of the only hosiery and lace journal yet established in the United Kingdom—a journal in every respect worthy of an alliance with *The Textile Mercury*.

LISTER AND CO., LIMITED: NO DIVIDEND.

Among no doubt a large assortment of party-coloured leaflets urging their recipients to "Vote for Codlin, not Short"—and *vice versa*—the following circular found its way last week-end to the numerous shareholders in Lister and Co., Limited, Bradford:—

Manningham Mills, Bradford, Yorks,
14th July, 1892.

Sir or Madam,—I regret to inform you that in consequence of the great depression of business, and the consequent fall in prices, both of goods sold and of stocks, the balance sheet for the past half-year shows a small loss.

The directors, therefore, do not think it advisable to pay an interim dividend on the Ordinary Shares.—
Yours truly,
JOHN LEE, Secretary.

In reference to the above our Bradford correspondent writes:—"The fact that the business of the past half-year has not been so profitable as to yield a dividend is naturally a great disappointment to the shareholders, and not a few were both surprised and chagrined on receiving the circular announcing this dismal fact. To those in touch with the business at Manningham Mills, however, it occasioned no surprise, inasmuch as business during the half-year has not been brisk at any time in any of the many departments. A large number of the disappointed ones argue that, if the firm could pay a dividend for the half-year of that memorable strike, when the works were practically idle for twenty-two out of the twenty-six weeks, surely they can when they are running, even though trade is not particularly good. They lose sight of the fact, however, that in the balance-sheet of that half-year there was an item of some £19,000 returned from dyers and others—who, presumably, thought discretion the better part of valour, and preferred to 'fork out' rather than assist in the ceremonial of a court of law; and shareholders ought really to rejoice that any such item is very unlikely ever to figure again on the profit side of the balance-sheet. Another important factor in the making of the profits during that seemingly barren half-year were the sales of the Company's manufactures in America, where their warehouses had been very largely stocked in anticipation of the disastrous operations of the McKinley Act. By those best able to judge, however, the action of the directors in avoiding the temptation to declare a fictitious dividend after a spell of dull trade is commended as a wise step, and one likely to inspire further confidence in them and to keep the firm on a sound basis." We trust that those who have been disappointed will be able to extract comfort from this view of the matter, and hope for better things in the future—though the days of large dividends from industrial concerns are fast disappearing.

LACES AND VEILS AT WEDDINGS.

Apart from the open testimony of many illustrated papers, it is evident that the time-honoured custom of wearing veils and laces at weddings is on the wane. With lace industries in different localities in such a depressed condition, and Nottingham not too buoyant or busy, this is a serious consideration, and it is worth while to ask whether remedial measures do not generally begin at the wrong end. Lace exhibitions, drawing-room meetings, influential committees, visits and reports from experts, leading articles and illustrations, new designs and prizes, and careful conserving of what remains of local skill, to say nothing of the grafting of lace tuition upon technical education in some way—these measures are all well enough in their way, but all together fall short of the importance of renewing and stimulating the demand for lace in the first place. The bridal veil is so esteemed an institution, and lace so appropriate to it, that all can regret such an encroachment upon custom as has already taken place; and none could wish to see such a comely ornament, and a vestment "all pure womanly" worn at such an eventful moment, entirely discontinued. The wearing of lace on gloves, and in ruffs and ruffles on the shirt front and about the wrists, has been allowed to cease and determine; very little now appears on aprons or handkerchiefs, or upon napery, and comparatively little upon under linen, but if fashion undertakes the regulation of ornament in our every-day affairs, such momentous occasions as marriages might surely be left alone. So, too, full sympathy can be felt with the work of Funeral and Mourning Reform Associations, but there can be no just cause or impediment why women and lace should not be joined together on the occurrence of holy matrimony. There have been times of reckless extravagance in lace at weddings, and on March 14th, 1822, to wit, when William Wallisley Pole espoused Miss Tynley Long, the bride wore a dress which cost, with its trimmings, no less than 700 guineas; her bonnet was charged 150 guineas, and her veil 200 guineas; while eight hundred wedding favours worth a guinea and a half each were distributed to friends, besides numerous others of inferior price and quality to other people. But even in the cause of rural industry such outlay could hardly be advocated now. There has been, too, close connection between brides of every degree and laces. It is curious that "brides" form an integral part of lacemaking. There is a bride-ground—a large six-sided mesh worked over with the button-hole stitching in *point d'Angleterre*; and there is ample room for all manner of apt reflections and plenty of happy thoughts, in the fact that the sprays of some laces, *point de France*, and *point de Venise* among others, are not worked upon a prepared ground, but are connected after completion by threads which are known among French workers as "brides." The poetry of the term in this relation is somewhat discounted by the old English title of "coscombs" which was given to them, and is altogether upset by the corresponding Italian name of "legs," but these qualifying distinctions could be easily omitted. There were also regular bride-laces in bygone days, which make a conspicuous figure in English literature. In Ben Jonson's *Tale of a Tub*, one of the characters says "We shall all ha' Bride-Laces, or Points, I see." In the account of the marriage ceremony of John Winchcomb, the bride is described as led to church between two sweet boys "with Bride-Laces and Rosemary tied about their silken sleeves;" and in Kollegrew's *Parson's Wedding*, of 1660, Bride-Laces and points to be worn in hats by friends are mentioned. These old bride-laces, with which the

wedding favour originated, were, according to Gifford, "fringed strings of silk, cotton, or worsted twist, given to the friends who attended the bride and bridegroom to church, to bind up the rosemary sprigs which they all carried in their hands. After the ceremony, these bridal favours were usually worn as ornaments, sometimes in the hat, at other times twisted in the hair, or pendant from the ear, according to the prevailing mode of those fantastic days." These illustrations of laces as connected with brides, however interesting, are not so much to the purpose as some endeavour, if possible, to maintain and extend the use of lace in wedding costumes, even, if it could by any means be managed, to the working of special designs in which the "crests, symbols, or devices of the bride or groom, or both together" could be made part of the pattern of the fabric—an old fashion which should suit well the exclusive taste of some rich people. With the rumours of forthcoming royal weddings in the air, the times appear ripe for some fresh effort on behalf of bridal laces.

STOCKINGS IN PARIS.

According to the *Wiener Zeitung*, stockings are in special favour with Parisian ladies. They play a very important part at watering places just now, as the boot is giving way to the shoe, which is often cut very low. So the shops on the Boulevards are well supplied with stockings of all sorts—stockings for the morning, stockings for the afternoon, stockings for the evening, and especially stockings for balls. Morning stockings are usually patterned with horizontal stripes, vertical stripes being less in fashion. The ground is seldom black, but one of the darker fashionable tints, a yellowish-brown, designated *cachou*, blue-green, Russian green, dark heliotrope, etc. The stripes are of different widths, and of contrasted shades. Among the embroidered stockings are some which must be pronounced extremely handsome; and some of the ball stockings are so transparent that they resemble lace.

BELFAST AND THE AMERICAN MARKET.

During the six months ending with June, the shipments of linsens from the United Kingdom to the United States were, according to the Board of Trade returns, valued at £962,970. What the contributions of Ireland, Scotland, and England are to this total cannot be ascertained from these figures, but an idea of the proportions may be formed from some statistics which have been compiled from American official returns. They relate to the years 1889 and 1890, and as a matter of interest for purposes of comparison we have added some particulars relating to Germany.

	1889.	1890.
	\$	\$
From Germany	1,642,000	1,941,000
" England	2,122,000	2,751,000
" Scotland	3,712,000	4,167,000
" Ireland	6,108,000	6,123,000

As these figures are for the fiscal year ending June 30 an excellent opportunity for comparison with our own Board of Trade returns is afforded. In 1890, according to the Washington statistics, our exports to the United States were valued at about £2,608,000 in English currency. This is at the rate of £1,304,000 for the half year—a total much in excess of that representing our shipments for the six months which have just elapsed. It will be seen that the Irish totals are far in excess of those of Scotland or England, a result which those acquainted with the linen trade would of course have expected. Of the shipments from the Belfast consular district during the past quarter we are able to give some interesting particulars. The total value was, in United States gold, \$1,933,000, of which Belfast

contributed about 95 per cent. The figures relating to textiles are given below in thousands of dollars:—

	Belfast.	Ballymena and Lurgan.
Cottons	149	16.2
Felt	5.9	
Flax	94.8	
Linsens	1403	62.8
Rope	25.2	
Threads	30	6.7
Unions	57.9	6.4

Belfast also shipped \$9,896 worth of machinery to the States during the quarter, and the other items consisted principally of ginger ale and whisky—the former being, strangely enough, a far more important item than the stronger liquor. Belfast, however, is in a way as famous for a certain brand of ginger ale as it is for its whisky or linsens.

THE LINEN TRADE IN FRANCE.

While on the subject of linsens, a word or two about the trade in France will not be out of place. The exhaustion of stocks of native-grown flax has naturally brought about a rise in prices of the material. Good qualities of tow yarns have for some time been rare, and there is a brisk enquiry for line yarns of superior quality. The jute trade at Lille has been quite disorganised owing to the fluctuations in prices of raw material for some time past. French spinners, finding it impossible to carry on business successfully on the basis of present quotations, have in many cases reduced their output. Some anxiety has also been created owing to rumours less favourable than before concerning the new crop. Manufacturers keep down their purchases to as low a level as possible, and the trade on the whole is in an unsatisfactory condition.

THE POSITION OF FAIR TRADERS.

It is quite obvious from the speeches of many Parliamentary candidates during the elections, that Fair Trade is occupying an increasingly prominent position in the minds of many of the voters in certain manufacturing districts. In Macclesfield the opinion is general that the defeated candidate lost much support through his avowed opposition to the imposing of retaliatory measures. On the other hand, the gentleman who now represents the division is, we believe, an open supporter of the policy of the party with which Lord Masham, Mr. Howard Vincent, and others, are so prominently identified. During the elections in Macclesfield there was a good deal of rosydism at meetings in support of Fair Trade, and it was quite evident to eye witnesses that a very strong feeling on the subject prevails in the town. In Bradford also the party of retaliation finds many ardent supporters. It is impossible to say what influence Fair Traders will be able to exert on the mass of outside opinion, but it is obvious from what has been seen during the past few years that there are constituencies prepared to receive with open arms candidates whose views are identical with those of the party to which we have referred. In this connection Mr. Cleveland's speech at New York on Wednesday is worthy of attention, as indicating the existence of a spirit which if maintained to the end by one or two manly and powerful politicians may bring about, eventually, great changes in the fiscal policy of the country. He describes the people as burdened with a tariff system that unjustly and relentlessly demands from them in the purchase of necessities and the comforts of life an amount scarcely met by the wages of hard and steady toil, while the exactions thus wrung from them build up and increase the fortunes of those for whose benefit this injustice is perpetrated. Working men are still told the existing protec-

five tariff is a boon, and that under its beneficial operation their wages must increase; while as they listen scenes are enacted in the very abiding place of high protection that mock the hopes placed in it. It is evident from this that the disgraceful scenes at Homestead will form the text for many a Democratic sermon during the coming campaign. "Remember Homestead" therefore may be looked on as one of the party cries during the struggle for office. The campaign which has now commenced will be one of the most interesting since the civil war, and upon its vast issues, of interest to others besides Americans, depend. In this connection it may be of interest to note the opinion of a German technical paper on the prospects of the Fair Trade movement in England. Whilst believing that Fair Traders are more numerous than they were, and maintaining that there is something to be said in favour of the tendency which they represent, our contemporary is convinced that they will fail. "The idea of Free Trade is so deeply rooted in England, and the conviction that it is Free Trade which has made England great is so widely prevalent, that there is no room for serious apprehensions of change of system."

THE BOLTON TECHNICAL SCHOOL: SPINNING, WEAVING, HOSIERY KNITTING, ETC.

We have always assisted to the best of our ability the cause of Technical Education, believing that if properly carried out it cannot fail to benefit the trade of this country. It is, therefore, a pleasure to note from time to time the efforts that are put forth to promote this important branch of educational work. Recently we had an opportunity of visiting the new Municipal Technical School lately opened in Bolton. This school, unlike many others, proposes to confine itself to purely technical instruction, leaving the more scientific and literary education to the other schools and institutes previously established in the borough. This is really the best plan, and is worth following in other localities: it enables schools to work in unison, and prevents a good deal of overlapping in the curriculum of subjects taught, which means in many cases a loss of teaching power. The Bolton Technical School is well fitted up; it is lighted throughout by the electric light, obtained from dynamos situated in the basement of the building, and the lighting scheme has evidently been well planned and is efficient. In the basement is the mechanical engineering workshop, fitted with suitable lathes, planing machines, and other tools; also the blacksmith's shop and foundry, and a lecture room, which serves also as the plumbing shop. On the ground floor is a lecture room for the weaving and other classes; a laboratory for teaching dyeing and calico-printing, very nicely fitted up; and a weaving shed for teaching weaving, fitted with hand and power Jacquard looms, warping beam, etc. This seems to be on too small a scale, and its resources will be over-taxed if a large number of students want instruction. On the first floor is a large lecture hall, which can be used for important meetings and large classes; and by means of revolving shutters this can in the short period of five minutes be converted into two class rooms. On the same floor is a room fitted with a number of the Rothwell machines for teaching hosiery knitting—a branch of industry for which Bolton is becoming famous, and which has often been referred to in these columns. The machinery is such as is used in actual work, and the appliances are in every way adapted for their purpose. We believe that there are only about three classes in the country for instruction in hosiery knitting—one at Leicester, another at Nottingham, and

the third at Bolton. On the next floor is situated the spinning department, where is arranged a representative set of cotton spinning machines: opener, carding engine, drawing, slubbing and spinning frames, mule, etc.—all the gift of the eminent Bolton firm of Messrs. Dobson and Barlow, Limited. The machinery is well arranged for convenient working, the only fault being perhaps that there does not seem enough of it to keep a large class at work. As, however, the school is not yet properly started, it is too early to say anything definite on this point: next session will begin to test the capabilities of the arrangements in this respect. There remains to be noticed the wood-working room, which is very nicely fitted up for about thirty students. The Bolton Technical School cannot fail to do much good; without doubt a great future lies before it, and we earnestly recommend all our younger readers who reside within easy distance of Bolton to go in for a course of instruction there in the technology of their trade. There are still some wants in the appliances of the school: the weaving room requires more pattern looms, preferably for hand weaving, as these do not take up so much room as power-looms, and yet for teaching purposes are as good, if not superior. No arrangements were noticeable for teaching design as applied to weaving, but presumably this will be considered part of the Art instruction to be given at allied schools. The school would do well to begin the formation of a museum, or rather museums, for every class-room should have its walls fitted with glass cases in which a collection of objects of interest and value to the class using that room can be kept always on view, and in the most convenient place for both the students and the teacher. The spinning department should have cases of various kinds of cotton; the weaving department, specimens of textile fabrics of all kinds; the dyeing department, dyes, and so on. Such cases so situated would be of incalculable value to the students of the school.

HOW THE FRENCH GOVERNMENT PUSHES FRENCH TRADE.

Telegraphic intelligence from Paris on Tuesday informed us that M. Jarnais, the Colonial Under-Secretary, has resolved to establish in every French colony a museum of samples of French products, and various manufacturers have sent in specimens of textiles, perfumery, machinery, glass, beer, spirits, etc., which will be despatched to the colonies. Each museum is to have an official who will give merchants or the public all information as to the goods, so that they may compete with foreign imports. It is suggested that the official might also furnish French manufacturers with information on the requirements and tastes of the colony. Of course this is far from being the first attempt to compass the end indicated. The present one, however, is apparently a better conception than those that have gone before, and may possibly have some better effect. It is an idea that might offer a useful suggestion to English manufacturers and merchants.

ENGLISH WOEOLLEN HOSIERY IN THE AUSTRALIAN MARKET.

If some of the hosiery manufacturers of the Midlands could spend a few weeks in the office of some of the leading Australian shippers of drapery in London or Manchester, they would open their eyes. In another column we refer to the extraordinary pertinacity displayed in the Metropolis by the representatives of French silk houses. The Maclesfield manufacturer, as is indicated elsewhere, is confronted at every step by aggressive rivals from the Continent, who inevitably carry off the lion's share of the

business offering. In London the struggle between the hosiery firms of Chemnitz and the English Midlands is persistent and severe. The cheap cotton goods bought for the Australian market are supplied largely by German houses, especially where fancy work is required. In fact we are informed by a well-known shipper that in goods at 18s. 8d. a dozen, and even less, German houses occupy a very strong position for the Antipodean trade. Nottingham, however, is not so far behind as some of the writers of trade reports from the town would have one believe. "For a substantial article at a fair price," said one of the principal buyers in the neighbourhood of Cheapside recently, "commend me to the article produced in the capital of the English Midlands."

THE LACE CURTAIN TRADE IN THE UNITED STATES.

Our Nottingham friends have for some time been greatly perturbed owing to rumours regarding the extension of the lace curtain trade in the United States. It would be idle to belittle the importance of the industrial changes which have taken place since the enforcement of that protectionist measure, the McKinley Act—designed to become historical. New businesses have been established in the United States during the past few months whose existence is directly attributable to this piece of prohibitive legislation. The lace curtain industry, as our Boston correspondent indicated in a letter published by us a few weeks ago, has taken root, from New York State to Texas. It flourishes—or rather exists—as far South as Galveston, and there can be no doubt that as far as the cheaper classes of goods are concerned there is now a fair field before the American product. But what of Nottingham, of Long Eaton, or of New Mills? Are they to be "stuffed out?"—we fancy hearing readers ask. Not a bit of it! It is the firm opinion of some of the oldest buyers in the trade that in medium and fancy makes British manufacturers will still be able to transact a satisfactory trade with the United States. The difficulties that have been put in their way owing to the higher duties are not, we believe, so severe as those which some of the Chemnitz hosiery houses appear to have successfully surmounted. The following advertisements which have appeared recently in American journals are of interest as shewing the schemes of some of our competitors:—

A MANUFACTURER in Germany desires to sell his entire plant for the manufacture of English curtains to some American concern. The owner would, in case of sale, be willing to come to America with his principal employes, such as foremen, finishers, etc., to put up the whole plant, which could be shipped in one steamer and consequently be in working order within four weeks. The factory is provided with the newest and best machinery and all the latest improvements. The buyer would be able to manufacture and sell at once without any sacrifice of time or money, as sample cards and all other accessories are plentiful and ready for use. Reasons for selling: The high import duties of all countries, which, combined with the keen competition, render the manufacture in Germany unprofitable and next to impossible, while America offers to this industry the best elements of prosperity. Address, —, Berlin, Germany.

Coming from a German source this is a somewhat unexpected admission of inability. "The high import duty of all countries" is, however, a phrase quite unwarranted by the facts: England still generously throws open her ports free of charge to our German friends. Whether "America offers to this industry the best elements of prosperity" or not is a question open to discussion. Here is another announcement recently published in an American contemporary:

A NOTTINGHAM lace curtain manufacturer with some capital, now in New York, wishes to meet with party to join him in starting a manufactory. Has excellent mill site and other advantages.—Address—

The experiment which our friend of Nottingham appears so desirous of undertaking has before now been made by his fellow-townsmen. In one case at least, it will be remembered, the result was speedy and disastrous.

THE WOOLLEN HOSIERY INDUSTRY OF LIEGNITZ.

According to the annual report of the Chamber of Commerce of Liegnitz, which has just appeared, 1891 was an extremely unsatisfactory year for the hosiery manufacturers of this industrial centre. One customer after another drops off: Portugal has gone; the new treaty of commerce with Austria shuts the door so far as that country is concerned; the treaty with Switzerland means higher tariffs for the hosiery department; trade with Italy is an insignificant quantity; the importance of Sweden is lessening year by year, owing to the tariffs; the impending tax on commercial travellers will destroy the business with that country altogether; Russia is lost; heightened tariffs in France prevent hope in that direction; the Argentine Republic and Rio are withdrawing their custom more and more; but Denmark, Holland, Belgium, and Mexico still patronise Liegnitz, and, last but not least, England. Indeed it would seem that the English trade is the mainstay (so far as foreign trade is concerned) of these sorely distressed hosiery manufacturers, and towards British markets all eyes are turned. In their anxiety to keep their establishments going manufacturers outbid each other to such an extent that an Englishman, it is declared, can buy German goods for a lower sum than the cost of production in Germany. As may be supposed, the condition of some of the operatives is deplorable: the factory hands are well paid, but those who work at home have their wages lowered by competition to starvation point.

THE NEW FRENCH TARIFF AND THE CALAIS LACE TRADE: A FRENCH FREE-TRADER'S VIEWS.

The effect of the new French tariff upon the industries of the republic was the subject of a conversation on Tuesday, between a representative of this journal and one of the leading lace manufacturers in Calais. Before proceeding to reproduce the substance of the conversation which passed at the time, it may be as well to remind our readers, especially those in the Nottinghamshire and Derbyshire districts, that the free-trader is very much in evidence in the North of France. The views we reproduce must be taken with the understanding that they are those of a gentleman connected with a trade which numbers among its members some of the most powerful adherents of the policy of *libre exchange*. Our informant acknowledged that it is too early as yet to express a general opinion, either condemnatory or otherwise, on a measure which has only been in operation for about six months, and he recommends a few months' further observation, for the purpose of enabling a clearer judgment to be formed. At the same time there are already signs on the horizon which show in a sense the direction in which the wind is likely to blow. The period of transition which follows the levying of a protective tariff is generally attended with suffering to some engaged in the industries affected. While emphasising this fact, our informant also wishes it to be understood that in his opinion his protectionist countrymen will not be able to fulfil the promise made when pressing the tariff upon France: to reclaim the home market for French products without injuring the foreign trade. M. Meline himself, speaking in the Chamber, said that the Calais lace trade would not be injured by the

tariff proposals of the Government. The protected industries would be enriched without impoverishing the others. In other words, while French cotton spinners would profit by the increased duty on yarns, the lace manufacturers of Calais who consume such products would not be hurt at all. Several months have elapsed, and although there has not been time to tell whether Calais will escape injury or otherwise, it is certain that those for whose benefit the protectionist pap was administered have not yet got more robust on it; and the statement is equally beyond question that the trades dependent upon the foreign demand for their existence have been impoverished by the new tariff. So says our Calais friend, and he points out in confirmation that the trade statistics for the first six months of the year shew a considerable diminution in some imports, a sensible reduction in the exports of manufactured goods, and a still greater falling-off in the imports of raw materials. As far as the two last-named changes are concerned, the result is apparently due to the tariff. In consequence of this, manufacturers have been compelled to consider seriously the question of reducing production, so as to prevent an undue increase of stocks, the clearing of which might eventually prove difficult. There is a general want of confidence as to the future, a result which in Calais is ascribed to the fiscal changes brought into operation several months since. The returns of the Bank of France afford several indications of a diminution in the spirit of speculation which prevailed a year ago. An analysis of its *bilan* shews a falling-off in notes, with an increase of cash in hand and of advances on ingots. These and other facts are brought forward as results of tariff influences. Protection, finally remarks our correspondent, takes from one section of the national industries in order to give to another. It withdraws from the best of them a portion of the capital by which they are carried on. This capital, having no employment, is lodged in the banks, where it will remain until the industries for whose benefit the tariff was imposed come to claim its assistance. The protectionists say that all the operatives thrown out of employment by the ruin of industries injured by the tariff will be able to find work in the new industries which will rise into life through its assistance. Calais looks upon this declaration with feelings of disbelief; and in the meantime we in England can only join our neighbours there in the task of waiting and watching.

Now that Calais men and Calais thought have been discussed, the occasion is an appropriate one for referring to the condition of the lace trade in that town. There are several questions of importance which require discussion, and some of these will no doubt be considered at a general meeting of manufacturers, to be held on Wednesday next, when Messrs. Cadart, Noyons, Herbelot, and Francés, members of the committee of the *Chambre Syndicale*, will offer themselves for re-election. One of the workmen's unions has addressed a petition to the employers, asking them to put into general use the automatic *passé coarçonné*, which is a guard destined to prevent accidents to the operatives in lace factories. At present there are scarcely 200 machines in Calais fitted with the appliance, and the masters have expressed their approval of the arguments of the workers' representatives when recommending its more general adoption. A somewhat important amendment has been made in the employers' rules, number 4 of which now reads as follows:—"All male or female operatives, or apprentices, who stay away from work for a day, will be considered as having voluntarily broken their engagement. The employer reserves

the right of dismissing hands by giving four days' notice on any day of the work, with the right of immediate dismissal if the circumstances warrant." It may be added that an effort will be made to have a good show of French lace at Chicago. Three-and-a-quarter million francs have been voted by the Chamber to secure the efficient representation of France. The American female is so lavish in her personal expenditure that many Calais manufacturers think there will always be a demand from the Republic for expensive articles of a fancy character, such as those produced by the lace manufacturers of France. A good show is therefore recommended.

OUR SILK INDUSTRY: A REVIEW OF THE POSITION.

We regret to find from enquiries instituted during the course of the week that the silk trade of Macclesfield and other English centres is in an extremely depressed condition, and that a very large percentage of the weavers are playing for warps. The elections may have had some deterrent influence; but it is feared that other causes, of a possibly more permanent character, have been at work. In one shed, with 120 hand-looms, nearly 100 are idle; and Messrs. Jackson, of Macclesfield, whose hand-looms number from 80 to 90, had not up to a recent date more than half employed. Some of the silk operatives have been idle for three months; but, fortunately for them, their wives or children have, in many instances, been able to keep at work in those departments of the Macclesfield trade where their services are chiefly in request. There are large numbers of women working silk power-looms now; but many of these are out. Hand-looms in the factories are worked by men; but in the Macclesfield garrets (which will some day, it may be presumed, be brought within the influence of the Factory Act), female labour is employed to a considerable extent for this class of work, and the younger members of the family, girls and boys, are engaged in avocations which, in the factories, are confined to adults principally, if not entirely. Some work, such as swivels, is still sent to Scotland; but it is impossible to say to what extent this interferes with the prosperity of Macclesfield itself. The swivel trade of that town has been greatly affected since this North Tweed competition set in. The silk gauze trade has to a considerable extent been shared in by the Scotch operatives. The fabric was formerly very profitable to the weavers. Being light, the output was large, and the acknowledged skill of the men gave them an advantage in this respect over their competitors in other parts of the country. The muffler trade has unfortunately declined, as we have already indicated in our trade reports, and the advance granted on certain goods three or four months ago has now been lost, owing to the change of fashion which has since taken place. There are some prepared to assert that there is yet a considerable demand for mufflers, and that the decline in the demand for Macclesfield goods is due to the fact that French houses have driven them from the market by offering cheaper productions. If we take the Australian trade as an example, and compare the prices of Macclesfield with French goods, it will be found that the difference in the prices of many of the cloths shipped is largely in favour of Lyons. At election times large quantities of cheap silk handkerchiefs with portraits of prominent Colonial politicians are bought by Australian shippers. These goods include 20-inch squares, and the price at which some recent lines have been bought was 20s. a dozen. There is, of

course, a large amount of fancy work on these handkerchiefs, the effect being very attractive. The trade is one in which Macclesfield houses seem to make little progress in competition with their energetic, enterprising, and intelligent foreign competitors. In London your French agent is everywhere. "He hangs on your doorstep," as the phrase goes, and will not take "Nay" for an answer. Owing to the large number of these representatives of French houses, in Wood-street, Broad-street, Cheapside, and the neighbourhood, competition is very fierce and prices in consequence extremely low. The Melbourne houses alone buy over £400,000 worth of silk goods (chiefly dress pieces) per annum from abroad, and Canadian importers take nearly £600,000 worth, of which only a small quantity is the product of English looms. The French, German, and Swiss silks, which are re-shipped from English ports to markets abroad, exceed in value over one third of our exports of British manufactured silks. We are not referring to yarn, but to manufactured goods only. For the past half-year the figures representing exports were as follows:—

	British Mads.	Foreign Mads.
Beard goods	£140,000	£184,000
Hks., scarfs, and shawls ..	218,000	..
Ribbons	3,800	105,000
Lace	179,000	..
Other	290,000	64,300
	830,800	353,300

That such a large quantity of foreign silks should enter this country for the purpose of re-export, shews forcibly how low must be the quotations at which they are offered, seeing that extra expenses must be incurred by this addition to the number of hands through which the fabrics pass before reaching the final consumer abroad. The ex-president of the Congleton Ribbon Weavers' Friendly Society disapproves of imitation of foreign methods. He says that adulteration causes the ribbon to crease and break, so rendering it worthless for many purposes where it is necessary to crumple it. Creases, when once got in, can never be straightened so well as in the case of pure silk goods. The lustre quickly disappears from the one but not from the other as long as it is clean. Notwithstanding these advantages in favour of the all-silk article, the foreigner with his cheap and attractive goods shipped to this country ribbons to the value of nearly a million and a half sterling during the past half year, of which, as our table shews, £105,000 were re-exported, while only £3,800 worth of English goods left the country. In making this calculation we take no account of English ribbons put up in French boxes, which may be, and most likely are, included in some of the exports of the so-called articles of foreign manufacture. Of the dress goods represented in our table of foreign exports, a very large proportion go to Melbourne and Sydney.

The depression in the spun silk trade has seriously affected the earnings of dressers, who have not been fully employed this year. The reason for this state of things is, of course, to be found in the decline which has taken place in the plush industry of Yorkshire and other centres where *Schäpffe* yarns are consumed. The existence of such a state of things is to be deplored; but under the circumstances neither employers nor employed can be held responsible. Neither strikes amongst the men, nor lack of enterprise amongst the masters, must be blamed. We fear that an old enemy, the McKinley Bill, must be the explanation of much of the depression which now prevails in this new but not unimportant branch of the English silk trade. A gloomy kind of consolation may be found in the circumstance that on the Continent things are quite as bad

in this department. We hear most depressing reports of the state of trade there from agents and others here representing French and German firms; and within a few days the highly respected representative of a leading German firm of spinners will, we regret to say, sail for New York, there to carry on a business which, until recently, could be remuneratively conducted in this country. The incident illustrates one of those changes which are constantly taking place in connection with the industries of the world. The extraordinary fall in raw silk prices must always be looked upon as one of the principal features in connection with the silk trade of 1891 and 1892. Italian raws, 9/11, quoted at 112 francs 30 years ago, are now 53 to 54 francs in Lyons. China Tatlees, which were 76/81 francs in 1863, are not now half the price. Upon the future course of quotations much now depends. The country has not yet approached the high-water mark of 1890, and it is a noteworthy fact that sales of union goods have fallen off greatly for the shipping trade. In addition to silk and cotton mixtures, there is a good deal of net and spun silk used in combination. Macclesfield has taken up this class of trade, although other branches of the union manufacture do not seem to have attracted attention in the town. The prospects of regaining the lost foreign trade in unions do not appear encouraging at present; and the outlook is the more depressing as a falling-off in the United States market is responsible for most of the losses which have been incurred of late. It appears difficult to hope for an improvement in the Yorkshire branch of the silk trade at present. Plush has drooped its head and does not appear inclined to lift it up just yet, although the sunshine of prosperity will, no doubt, eventually shine again, bringing this beautiful fabric into favour once more. The vast outlets for English goods formerly afforded in the American market would seem to be permanently closed. Our Boston correspondent last week referred to the departure for this country of the principal of a firm of plush manufacturers, which is about to increase its orders for machinery in England. We can, of course, still supply looms, but the fact is one which will afford little consolation to manufacturers. Any revival of fashion in favour of silk pile goods would enable us to increase sales in Canada, Australia, the home market and elsewhere. But for some time the United States market must be regarded as practically closed; and the spun silk industry cannot be expected to recover from the blows which it has sustained during the past two years. We are glad to notice, however, that the Bradford trade with the United States has increased heavily of late. Branches which had suffered most greatly from the McKinley Bill are now slowly recovering, and some very substantial orders for worsteds have been received. Under the circumstances, there may be hope even for plush. There is certainly a good prospect for Manningham, judging from the latest developments of Lister and Company, whose mohair plush is a novelty which should command decided attention. At present the sun of prosperity does not shine over Lister & Co., Limited, as will be perceived from the remarks of our Bradford correspondent, which appear in another column. This state of affairs will not, however, it is to be hoped, endure for long. The circumstances which have brought about the alarming decline in the profits of our largest plush concern are of an exceptional character.

The remarks in the previous portion of our summary of the silk position were written before the results of Messrs. Lister's operations for the half year were known. The circular reproduced in another column is therefore a striking confirmation of the accuracy of our remarks concerning the position of the important industry with which they are connected.

PROPOSED REDUCTION OF WAGES IN THE COTTON TRADE.

In relation to the proposal now under consideration of a reduction of wages in the cotton trade, that it is in any sense an unexpected movement cannot be affirmed. It is no "bolt from the blue," because the industrial and commercial skies have long been overcast with masses of clouds highly charged with electricity, and liable on the least provocation to discharge their destructive contents. The oppression which is usually felt precedent to such a storm has at last become unendurable, and measures of relief are being considered. The situation as it exists to-day, and as it has existed for a considerable time, hardly admits of an alternative course being taken by the employers without the commission of commercial suicide. This course, which the exigency of circumstances imperatively dictates, is a reduction of wages of not less than 10 per cent. The facts which compel it are such to be regretted, but they cannot be evaded. To those not in immediate touch with the condition of the cotton trade the demand of the employers will come somewhat as a surprise, and they will not, with their limited knowledge, be prepared to admit that it is justifiable. But they would be if they knew more, and therefore they should be chary of prematurely condemning the employers for their action, or of awarding sympathy to the operatives in the adoption of what would be a disastrously mistaken course: namely, resistance. It may be well to briefly review the facts of the recent course of the cotton trade, and to take a glance at its near prospects, as these will show the compulsion against which the employers have long been struggling, and under which they are now acting.

It is an admitted fact that as far as the operatives are concerned they were never in a better position in the history of their industry than they are at the present moment. Employment is moderately abundant and their earnings are higher than ever they were before. The earnings of Macclesfield silk weavers (adult males) do not average 10s. a week the year round—a wage that young girls in our Lancashire mills would consider extremely small. A casual observer would conclude from this that the cotton trade was in a very prosperous state, but the conclusion would be a mistaken one. Owing to the institution almost forty years ago of the Blackburn Standard List, and imitations of this in all the other manufacturing and spinning districts, the contract price of piece-work has remained without material change. In the meantime inventors and machinists have gone on steadily improving machinery, rendering it more perfect, and increasing its productive capacity to such an extent that, the contract price of piece-work from it remaining much the same, the aggregate earnings of the operatives attending it are now from 50 to 150 per cent. more than they were in the period between 1850 and 1860. Machinery is now so perfect, and so thoroughly automatic in its action, that it has greatly reduced the labours of those who attend it, and rendered the work of one stage infinitely better for that which follows after. Given suitable material for the intended product, bad work can hardly be made from it without a special effort to produce it. From the cotton mixing room to the yarn warehouse in the spinning department, and from the winding room to the cloth warehouse in the weaving department, labour has been enormously reduced compared with what it was at the period to which we have referred, whilst the automatic stopping motions applied to every machine have relieved the attendants of fully 50 per cent. of the care and attention they

were previously compelled to devote to their work. These improvements have necessarily greatly added to the production of the machines, which has been further greatly increased by the acceleration of their speed whilst at work. The result upon the contract rate of wages in vogue has been a great increase in the aggregate earnings. This has been further added to by the attendants having by these improvements been enabled to take charge of more spindles and looms, as that case may have been. So far has this change gone that the operatives can hardly be called work-people at all; they are the superintendents of automatic working machines. Their real labour as labourers has been reduced until there is hardly anything of it left. This, as just observed, has enabled them to take charge of more spindles and looms, which has greatly further increased their earnings. They are not working harder to-day in any sense, or ensuring a greater production than they did under the old conditions; it is the improved machinery which is doing this, and they have transferred the energy they previously spent in making good the defects arising from imperfect machinery to superintending a greater quantity of more perfect machinery, for the production from which they obtain additional pay. This very satisfactory result has accrued to them without any effort whatever on their part, and without the expenditure of a penny. It has arisen purely from the enterprise of their employers in substituting the imperfect machinery of the days to which we have referred by the new and improved types of later days which the skill and enterprise of inventors and machine makers have put into the market. They have, therefore, gained without any special effort or desert of their own a very large share of the fruit accruing from other people's labour, skill, and enterprise. Concurrently with this, and largely as a result, they have shared in an equal degree in the benefits of our extended commerce, which has so cheapened the necessities and even many of the luxuries of life that they have abundance of everything necessary for sustenance and clothing, of which their grandfathers and mothers went with a very scanty supply, whilst they have also plenty of things to which those were entire strangers. Thus their earnings have been doubled, and their purchasing power more than doubled, thus quadrupling their betterment. These facts, which are unfortunately hardly known, ought in this crisis of the trade to induce a generous consideration of the difficulties of their employers, and result in a determination to co-operate with them in an earnest endeavour to overcome them.

Let us now glance for a few moments at the condition of their employers. They have never got a share of the advantages we have described anything like corresponding with that which has fallen to the former. Their anxious labour and the difficulty of successfully conducting their business has during over thirty years been steadily increasing. In the decade to which we have previously referred, 1850-60, money was easily made; but during and after the American Civil War things were greatly changed. The fluctuations of prices during that time swept away many a competency from the possession of spinners and manufacturers. After this difficulty was got through competition sprang up on every side; and amongst our foreign competitors, and even in our own dependency, India, was stimulated by protective tariffs. To overcome this, spinners and manufacturers were simply compelled to re-furnish their mills with new and better machinery in order to hold their own by reducing the cost of production. This reduction did not go into their pockets as

a profit; it had to be given away in order to secure work for their machinery, and employment for their hands. The improvements effected in this manner gave them for a short time the command of many markets; but foreign governments seeing this, saved their people from industrial defeat by raising impassable tariff barriers against the productions of Lancashire. The result of this was a great aggravation of competition amongst themselves for the trade of neutral markets, and, as a corollary, a great reduction of their profits. Production was still further cheapened by improvements, in order to continue the trade, and, if possible, bring our yarns and calicoes within reach of still poorer classes of the population of consuming markets, who had been hitherto debarred from becoming customers by their deep poverty. Successive descents of this kind have been made until now a lower plunge has been taken than ever before, and we now find for the first time there is no response: we have practically got to the limit of the world's present consuming capacity considered in relation to existing conditions. During all this time, and through all the changing conditions to which we have referred, there has been no accession of profit to spinners and manufacturers, but a constant struggle on their part to preserve what there was; and, we are compelled to add, constant defeat has attended them, as all the time there has been a steady frittering away of their margin. But this is not all. The enormous losses made during the past couple of years have depleted the trade of nearly all its means, and left it impoverished to a condition without previous parallel. Practically speaking, all its reserve power, which should go for renewals, extensions, etc., has been expended, and if some important and efficacious step is not taken that will bring about a condition in which it can recuperate, its entire destruction is threatened. These are facts to which during the past two years we have many a time drawn attention, and from which we have predicted the crisis now upon the trade. Is it too late to induce serious reflection upon the part of everyone interested in order that petty individual interests may be subordinated to the general good, whilst an honest effort is unitedly made to restore the industry by which Lancashire lives and has its being, to a condition approximating to health?

And what has been the conduct of the operatives, who have received the greater portion of the benefit that has accrued from the trade during this period? Truth compels us to say it has been inconsiderate and cruel. They have assumed all the credit, taken all the profit, and done almost every conceivable thing they could devise that would prove an obstacle in the way of their employers' success. They have been forgetful or have ignored the fact that every step they have taken that has increased the cost of production has thrown advantages in the way of their foreign competitors, and has diminished the power of their employers to pay them the current rate of wages. They have thereby done everything they could to precipitate the crisis that has now come upon them. It will be well therefore, that in this exigency they should take care not to make a similar mistake, because every shilling spent by them in resisting the inevitable reduction that is now in front of them will entail the spending of another on the part of their employers, and to that extent will weaken their capability and defer the period when they will be enabled to restore present rates.

We wrote the above in advance of the employers' meeting yesterday, which, as we go to press, we learn has resolved to recommend a reduction of 10 per cent. in wages and a resort to half-time working.

A SILK EPISODE.

The chances of time and circumstance are not often favourable to textile history. The general reader is so far like unto Galileo that he cares for none of these things, so that few people take the trouble to gather or preserve textile information. Facts, concrete or confirmatory, have generally to be patiently and laboriously ferreted out, and are not always to be had for the seeking. Rarely does so kind a fate occur as that which brought for the present penman's acceptance, a little while ago, a weather-worn leaf from an old scrap-book, headed "Spitalfields." Thanks to the thoughtful friend who sent on this interesting bit of literary salvage, and to the unknown hand which collected these various press clippings, we have on this sheet a contemporary account of those events of 1765 which made it, perhaps of all others, the most memorable year in the annals of English silk. As we all know, Spitalfields was then in sore distress. Although boast was made then and long before of English superiority in silk manufacture, French fabrics continued to find their way into London either through the Customs or in spite of it, and the weavers had during the previous year presented a memorial to the Lords of Trade, asking for double duties at least to be laid upon all foreign silks. Before we begin to draw "odorous" comparisons, and think that they could have authorised Lords of Trade in the eighteenth century, while we have to protest from time to time against trade interests being left so severely alone and still wait for the appointment of a Minister of Commerce, it must be said that no attention was paid to the weavers' petition. But, again, before we blame those Lords of Trade, it is necessary to add that they received at the same time a statement from the silk throwsters to the effect that the quantity of silk imported was insufficient to satisfy the requirements of trade, and the silk mercers brought another memorial, affirming that there was no lack of employment, but rather a scarcity of workers to execute orders in hand. The inaction of the Lords of Trade was so far justified, but meanwhile the weavers appear to have been starving. When Parliament met in January they, and those of the other trades connected with them, assembled too, in vast numbers, and marched with drums and colours by several routes to the Palace and Parliament House in order to present petitions praying for relief by a total prohibition of foreign-wrought silks, and they also personally applied to several members on their way to the house in the humblest terms, imploring them to have pity on the wretched situation of themselves and their families. The sight of such a multitude of people, thrown idle for want of employment and probably ready for the commission of desperate deeds, together with a report that the weavers of the inland towns were preparing to set out for London, spread a dreadful alarm, especially among those who conceived themselves obnoxious to their resentment. They, however, did no other mischief than breaking the windows of some houses where they supposed French silks were sold, and were appeased by a contribution for their immediate relief, and an engagement entered into by the principal silk mercers to countermand all their orders for foreign silks. Thus far Macpherson, and then so far as either the *Annals of Commerce*, or Anderson, or Porter are concerned, the trouble might be thought to have ended, due regard being had to the revision of the duties on raw silk by one section of an Act of Parliament, the prohibition of the import of foreign-manufactured silk stockings, mitts, gloves, ribbands, laces, and girdles under new or increased penalties by another section of the same statute, and the later passing of "A Bill for laying additional duties on the importation of silks, velvets, etc., and otherwise encouraging the silk manufacture of this kingdom, and preventing combinations among journeymen." But here our newspaper extracts come in to show that the affair was a far more serious one than is thus related, and

that the mercers, who climbed down with such alacrity from their opposition to the weavers' petition, were not let off so easily as might be imagined. Of the January demonstration no account is presented, but from a newspaper of the next month these significant paragraphs are taken:—

Last week it was made appear, before a certain respectable body, that no less than 1,700 looms in the silk branch were then unemployed in Spitalfields, Bethnal-green, &c., from which instance alone, it is evident, eight thousand five hundred persons are out of employ, computing only five to a loom with the draw-boy, which is much under the number, including silk-throwsters, winders, &c. &c.

Last Friday, at a grand meeting, when the merits of the silk mercers and weavers were candidly required into, the latter undertook to produce greater pieces of work, of our own manufacture, than the other parties could, from any part of Europe; an examination and proof of which will shortly take place. (1765.)

A weaver in Spitalfields is mourning a mourner for a piece of rich brocaded silk, for the wear of a percentage of great distinction; the workmanship of which alone is to be paid for after the rate of 25s. or 33s. per yard, and is intended as a challenge for any foreign manufacturer to produce its superior. (Feb. 1765.)

For a while there was quiet, and these Spitalfields records tell of nothing more serious than an accident in April to a justice of the peace after spending an evening at "the Three-Tan-tavern, Spitalfields." His worship fell over the balustrade to the bottom of the staircase, probably having spent the evening not wisely but too well. This insignificant incident heightens the dramatic effect of an ominous outbreak in May, thus briefly chronicled:—

TUESDAY 14.

A large body of weavers marched in procession from Spitalfields to St. James's, having a black flag flying before them, with a view of presenting to his majesty a petition setting forth the distressed condition of themselves and families on account of the decayed state of the silk manufactures in the metropolis, occasioned by the importation of foreign silks; but his majesty being at Richmond, they failed in their design.

WEDNESDAY, 15 MAY, 1764.

His majesty went to the House of Peers, attended by the Earl of Mar and Lord Cadogan, and gave the royal assent to the regency bill, and to such other bills as lay ready for his majesty to sign. He was followed by an incredible number of Spitalfields weavers, with black flags, imploring his majesty's gracious interposition in behalf of themselves and their very wretched families.

THURSDAY 16.

About 8,000 Spitalfields weavers were drawn up in Massfields, and from thence marched again to St. James's. They had, in their last insurrection, offered some insults to a noble duke, in consequence whereof the guards were ordered out to prevent the like outrages for the future. This precaution had the desired effect, and no violence was offered on the part of the weavers.

It was not without good cause that an open uprising of the weavers was regarded with dread. The old watchmen were as helpless as straws upon a wave in times of real peril, and the weavers had always a reputation for fierceness and daring, when provoked, strangely at variance with their occupation and ordinary demeanour. The story of the feuds and fights in which weavers have at times taken part would make a curious chapter of trade history, and as a French philosopher could discover that glovers were a mild and peaceable set of men owing to the dulcifying effect of leather upon the character, so it might also be believed that hand-loom weaving in old time made men somewhat irritable and altogether courageous. Certainly the citizens of London had reason to fear what the silk weavers might venture to do. The news intimations were followed by more ample information, not of a reassuring character, when the reporter went abroad:—

On Thursday last when the *monies* went to the House of Lords, a noble peerage, on the reception of a letter given him in his chair, drove with the greatest precipitation under the gate at the Horse-Guard's into St. James's Park, in order to acquire his Majesty's wish to, and avoid the fury of the populace, otherwise it is imagined the consequence might have been fatal. On Friday night, during the riot in *Blanchbury-square*, no less than forty-five persons were trod under foot by the horse grenadier guards, and many of them dangerously wounded; among which number was a joiner's coach-maker, in Long-acre.

who had his legs broke by being rode over, and a shoe maker in St. Giles's, who had his left breast transfixed by a bayonet; most of the shops in that part of Holborn were shut up, and, on the whole, it is feared much more mischief is done than we have yet received account of.—The same night, during the time of the windows being broke of the house and shop, Mr. Carr, on Ludgate-hill, one who was much more active than the rest was pointed out by a constable, who, on the populace retiring, dogged him into Cheap-side, where (happening to meet with one of the City-marshal men) he seized him, and the Lord-Mayor, &c., being then at the *Half-moon Tavern*, in that street, he was carried before his Lordship, who committed him to the Compter; on this a report was spread in *Spital-fields*, that a weaver was taken up and committed to the Compter; which occasioned a number of them to assemble at the Compter in order to release one of their body; but on the keeper's expostulating with them, and telling them that he did not believe he was a weaver from his speech, which was a piece of coarse sacking, they agreed that some of the weavers should go into the prison, and examine the person, who proved to be not a weaver, but a porter to a grocer; upon which they returned satisfied; leaving the prisoner in custody.—The troops which were ordered out on Saturday morning in and about Ludgate-hill, the Tower, &c., were ordered to their quarters about ten o'clock, but to be ready upon beat of drum, since which we have not heard of the least disturbance. Their chief orator was one Jones, a Welchman. This person received the message, on Thursday last, at St. James's, from the Earl of Northumberland, after which he drew his brethren off to the Green-Park, and like another Ket, signified his Majesty's pleasure from a tree; and on Friday he made a long harangue to them in Old Palace-yard, persuading them to disperse, and seems to conduct himself with a good deal of modesty and decorum. (May, 1765.)

There were those then who would, to adapt a familiar phrase, seek the bubble popularity even in the rioters' mouths, as this paragraph shews:—

On Friday last a personage of the highest distinction, as he was going to the Parliament-house, not chasing, it is apprehended, to put himself under the protection of the guards, which were drawn up to prevent any outrages among the weavers, ordered his chariot to *Abingdon building*, where he came out, and walked through the thickest ranks of those unfortunate poor fellows, who, charmed with his spirit and the confidence which he reposed in them, buzz'd him the whole way, and offered up the warmest wishes for his happiness, and that of his illustrious family.

Serious and threatening as the rising was, the troops appear to have been able throughout to cope with it, but they were kept under arms, and those posted in *Spital-fields* had to "lye every night in the church, there being no other place for their accommodation." There had been arrangements made at first for calling out the militia, and at the same time that this item of news was published, there was a very broad hint given upon a matter which has, from first to last, caused many complications, but which must just then have been calculated to cause the French Ambassador considerable uneasiness:—

There is but too much reason to fear that one cause of distress among the poor weavers is the great nursery of spagging, which is suspected to be in the bowels of this metropolis. The quantities of French silks, seized now and then, are nothing in comparison to what is permitted to be amongst us under the pretence of privilege.—*Query*: What would the French government say, if our Ambassador at Paris was to order over by his domesticks, &c. great quantities of English silks, and he should take every means to dispose of them, in order to hurt the manufactures of France?

So insidious have the Officers of the Lieutenancy been in giving notice to the inhabitants of this city to make themselves ready, should there be occasion, for assembling the militia, that yesterday they were engaged from early in the morning (and even in time of divine service) till late in the evening, in delivering their notices to the respective inhabitants. (May, 1765.)

So, as far as these interesting extracts shew, the revolt of the weavers ended. What punishment, if any, was meted out to the ringleaders is not stated, and the other silk paragraphs of the few following months point, at least, to a revival of trade activity. But some two or three of them, at least, must not be passed over, for each might serve as a text upon the different ways and means by which trade has been and still is stimulated, or regulated, so far as may be. What a familiar ring there is

about either of the following announcements! What parallel passages might be found for each of them! What failures might almost invariably be shewn to follow them!

A very great Personage, we are well assured, expressed his warmest approbation at Court on Tuesday last, when he saw such numbers of the first Nobility dress in the Manufactures of their country; making use of this remarkable expression at the same time. That every Prince should judge of the regard which his Courtiers entertain for him, by the assiduity which they manifested about the interest of his people. (1765.)

A lady of eminence, near St. James's, has, since the petition of the *Spital-fields* Weavers, given away a large quantity of her cloaths, which had been made up of French silks, to her servants, with a command that they should wear them full-trimmed as they were, in order to bring into disgrace the manufactures of a foreign country. (June, 1765.)

We hear a very eminent Master Weaver, of *Spital-fields*, is now executing a large commission of British manufactured broads, for a Great Personage lately arrived here from Holland. (July, 1765.)

S. W. B.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

BOSTON, JULY 14TH.

THE CARPET TRADE.

The carpet industry of this country, now amongst the most important of its kind in the world, is chiefly confined to the States of Pennsylvania, New York, and Massachusetts; the annual production of which is estimated at 45,000,000, 19,000,000, and 13,500,000 yards respectively. This large total of 85,000,000 yards is consumed, of course by our own market, which means that the consumption per head is about 1½ yards per annum. Of the product of 1882 there were 27,000,000 yards of grain, about one-half of which was of the cheaper grade, 14,000,000 yards of tapestry, and 8,500,000 of body Brussels and Wilton. Between 1850 and 1880 the industry had increased 80 per cent. in the number of factories, 20 per cent. in the invested capital, 8 per cent. in the number of employes, and 20 per cent. in wages. During the ten years between 1880 and 1890 there was a very marked change. While the number of factories had decreased by nearly one-half, those that remained had been greatly enlarged and fitted entirely with power looms, greatly increasing the production, which amounted, as mentioned above, to 85,000,000 yards, valued at \$54,000,000. This did not include the production of moquettes, of which there was produced about \$3,000,000 worth.

PRINT QUOTATIONS: A CHANGE.

The following circular has been issued by the American Printing Company, one of the leading firms in the trade:—

NEW YORK, JUNE 23, 1892.

We hereby announce the following changes in prices of prints, to take effect July 20th, 1892; American indigo advanced to 5¼c; American indigo and gold advanced to 5¼c; American shirtings advanced to 4¼c.

The selling price of the above-named goods will remain as at present at 5½c, and 4c, respectively until July 20th, when it will be advanced likewise to 5½c net for American indigos, 5¼c net for American indigo and gold, and 4¼c for American shirtings. The selling price of American B indigo is hereby fixed at 9c net.

No goods, as above described, must be sold or billed after July 20th, 1892, until further advised, at less than the new price indicated, and any such sale or billing of said goods after July 20th will be construed as a violation of your agreement with us and treated accordingly.

THE AMERICAN LINEN INDUSTRY.

The following summary of the position in this much talked-of trade may interest linen firms in England. The Stevens Company, it must be noted, existed before the McKinley Act was passed. It is not a chick hatched by that bird of ill-omen. Some particulars regarding a few of our jute mills are also given:—

The Chelsea Jute Mills, of Brooklyn, use 400 looms in making jute fabrics.

The Fleming Linen Works, of Appleton, Wis., use 42 looms in making linen crapes.

The California Jute Mills, of Oakland, Cal., employ 125 looms in making bolans.

The Minneapolis Linn Mills, of Minneapolis, Minn., uses 50 looms. They make linen crapes.

The Stevens Linn Company, of Webster, Mass., uses 400 looms and is operated by seven boilers and three water-wheels in making crape.

The 402 looms (all on crapes) referred to in the above summary practically represent the extent of the American linen industry. Even the poor long-suffering linen manufacturers of Leeds could beat this record "with their hands down," as the slang American phrase goes.

HOSIERY NOTES.

There is abundant evidence of growth in connection with hosiery trade, as will be seen by the following accounts of extensions in American mills:—

The Blackstone Hosiery Co., of Central Falls, R.I., are adding new machinery to their plant.

The Pulaski Knitting Co., of Savannah, Ga., are about to add 15 more machines to their plant. It will now number 54.

The Barwick Knitting Co., of Providence, R.I., which are doing a very fine business, are about to add a number of Bronson machines.

The Chemnitz Co., of Providence, R.I., are soon to add new machinery. They make a nice line of full-fashioned hosiery and report business as being very good.

The Paramount Knitting Co., of Danville, Ill., has been incorporated with a capital stock of \$24,000. David B. Evans, G. B. Fetig and Charles M. Fetig are the incorporators.

St. Johnsville, N.Y., is to have a new knitting mill. Ketchum and Taylor, of Utica, have bought the Heinrich furniture factory for a knitting mill and will commence altering at once.

The Orion Knitting Mill, of Kingston, N.C., is about to increase its capital stock to \$25,000. Its present total resources amount to \$17,000. It is intended to increase the plant by the addition of knitting machines.

The latest particulars concerning the new mill which is to be fitted up by Sam Hodgson, of Lenoir, N.H., are that the company will be named the Hodgson and Holt Manufacturing Co. The incorporators are Sam Hodgson, F. P. Holt, James H. Talbot, and four others. The capital stock of the new corporation is \$200,000. The first named, who are the prime movers in the enterprise, control the majority of the stock. The mill which F. P. Holt has been running will be consolidated with the interests of the Hodgson Knitting Machine Works. In the near future new buildings and additions are to be made to the plant.

William Roberts, a woollen manufacturer from Bradford, England, has just completed a large mill in Bergen county, N.J., opposite Passaic. It will employ 150 hands. The mill and a long row of cottages for operatives have been built under his direction, and improved looms and other machines for the manufacture of woollen goods are being built.

Designing.

THE ANALYSIS OF PATTERN.—XV.

THE WEIGHTS OF FINISHED CLOTHS.

(Continued from page 47.)

Having estimated the loss due to the extraction of oil, etc., in scouring, the loss of fibre in scouring, and more particularly in milling and those processes comprehended under the term "finishing," must be estimated. This is a much more difficult task than estimating the loss in oil, since yarns are subject to greater variation in this respect; and further, it is not possible to test even in a general way the loss likely to occur, previous to putting the cloth into work. Against this, however, must be placed the fact that cloths can be varied in weight to a very great extent by milling up either in length or breadth, or both, as required, and also by tentering, crabbing, etc.; but there are limits to the modifying influences of these operations, and those limits must be thoroughly comprehended if accurate results are to be obtained.

Firstly, then, a thorough comprehension of the influence upon the weight of a cloth of shrinkage, warp and welt way, is necessary. Now, cloths being sold by the weight per yard,

any and every width, it is evident that contraction in width has no influence on the desired weight whatever, certain standard widths being recognised in the various trades, these being obtained very accurately by the milling and tentering. Contraction in length, however, has a direct influence on the weight of the piece. For example, if a cloth 40 yards long weighs 1 lb. to the yard, the whole cloth weighs 40 lb.; if this is milled up to 20 yards, supposing there is no loss in milling, the piece will still weigh 40 lb., i.e., 2 lb. to the yard; or

As 20 : 40 :: 1 lb. : 2 lb. per yard.

So that the contraction in length directly influences weight.

This, however, in one sense, is not true, since the more a piece is milled, the greater is the loss in fibre, which is particularly so in the case of woollens. This loss of fibre can only be estimated by experience, but since a manufacturer never puts material into a cloth to mill out, the deduction that follows will give an accurate idea of what may be expected. Another influence to be carefully noted is the heat employed in the various finishing operations. For example, it is found that in finishing woollen and worsted cloths, if the heat rises above 100° F., a loss in weight occurs—probably due to some of the wool being dissolved. Much heat is also developed at times in the milling machine, so that it is evident these matters should be carefully watched and noted down. With certain silk goods variation, owing to loss of fibre, etc., is not so marked, but atmospheric influences should be carefully noted, and if filling (China clay, etc.) has been used, as is often the case with cotton goods, a careful estimation of the pure fibre should be made.

A long experience with woollen and worsted goods in various forms, i.e., as unions, dress-face goods, serges, coatings, meltons, etc., is summed up in the following:—

Allowance for Loss in Weight in Finishing:—
For ordinary goods allow about 1/4th on the calculation weight. For example, a cloth in the grey weighs 80 lb.; in the finished state it should weigh 64 lb. For face goods allow about 1/3th on the calculation weight, i.e., a cloth in the grey weighing 80 lb., when finished should weigh 53 lb. These numbers will, of course, vary slightly, according to the yarns, etc., employed, so that the matter cannot be thus summarily dismissed. The above must be taken as a general rule; but the details should be further considered.

For example, suppose the analyst has dissected a cloth on the lines laid down, has found the counts of warp and weft, threads and picks per inch, and weight per yard of the finished cloth, then the following points must be successively decided:—(1) Sett in the loom; (2) width in the loom; (3) picks per inch woven; (4) length of warp; (5) counts of both warp and weft in the grey; (6) weight per yard calculated. Each of these points must be dealt with in detail, and then to render thorough comprehension easy, an example shall be fully considered.

The Sett in the Loom:—This to the unexperienced may prove a difficulty, and, in fact, will be to any one a matter of estimation, since cloths, as already intimated, may be varied considerably in width during finishing; and variation in width will directly influence the threads per inch. For example, if a cloth 32 inches wide has 64 threads per inch, and when finished measures 30 inches, then

As 30 : 32 :: 64 : 68 picks per inch in finished cloth.

Inversely, then, a cloth having 68 picks per inch as analysed, will have been sett 64 threads per inch in the loom, 32 inches wide, to finish to 30 inches. In estimating the sett in the loom, then, the finishing must be taken into account, and the sett based upon this.

List VIII.* shows a variation of about 2 inches for narrow width, and 4 inches for broad width.

(2.) **Width in Loom:—**If the setts finished and in the loom are known, the width may be deduced by direct proportion. Taking the finished threads per inch to be 68, and the threads per inch in the loom to be 64, then any desirable finished width may be taken, say 30

* To appear next week.

inches, and the width in loom decided by the relative number of threads finished and in the loom as follows:—

As 64 : 68 :: 30 : 32 inches wide in the loom.

(3.) **Picks per inch woven:—**Finding the picks per inch as woven, is very similar to finding the threads per inch in the loom, both depending upon shrinkage in finishing. The shrinkage warp-way is varied very considerably; but taking List VIII. as a guide, and allowing 9 per cent. for contraction in length, then 68 picks per inch finished will give—

As 100 : 109 :: 68 : 62 picks per inch woven.

In other words, the picks per inch will vary in direct proportion to the length of the finished and greasy cloths respectively.

(4.) **The length of Warp:—**This is a most important matter, and one to which, so far, little attention has been directed. In its simplest form the question may be put as follows:—A warp 100 yards long is put into the loom: what length of cloth will come out? There are two matters here involved—firstly, what allowance is necessary for twisting-in and finishing a piece; a fabric of the warp being usually left in the healds to which to tie the following warp? Secondly, what will the warp take-up in weaving?

The first matter will be influenced by the tier-in and starter of the loom, and can only be estimated when the time comes; but an allowance of 1/4 yards under ordinary circumstances should be ample.

The second matter is one of much importance, since it affects not only the calculation, which we are considering, but also calculations relating to allowances for backing and figuring warps. The take-up in the case of single cloths must first be considered, and reference to Diagrams 25 and 26 will render this easy of demonstration. Diagram 25 is a plain cloth, and if constructed perfectly will give an equal curvature in both warp and weft; and since the warp threads change for every pick, it is evident that the take-up in the case of plain weave will be more than in the case of twills, etc. Now, as already demonstrated, the angle of warp with weft, or vice versa, should be one of 60 degrees, and the triangle as shown will have relatively 1 for altitude, 2 for hypotenuse, and 1.732 for the base; consequently, any line drawn straight through the centres of the warp and weft threads and picks, represented by the bases of all triangles similar to ABC, will represent the length of cloth, while finish hypotenuses BC will represent the length of warp to give the forenamed length of cloth; or, 1.732 yards of cloth will require 2 yards of warp, there being a take-up of .268 yards in 2 yards, and this expressed as a fraction is about 1/4th; so that for a perfect plain cloth, finished strictly to the theoretical conditions laid down, 100 yards of warp will yield about 87 1/2 yards of cloth.

With the two-and-two twill there will be less take-up, since there are relatively fewer intersections. The calculation for take-up in this case will be two threads \times 2 (1.732) intersections = 3.464 yards of cloth from 2 threads \times 2 (2) intersections = 6 yards of warp, the take-up being .536 in six yards; or about 1/4th. Another important calculation is that for the 8-end sateen, which is as follows:—

6 threads \times 2 (1.732) intersections = 9.464 yards of cloth from warp.

6 threads \times 2 (2) intersections = 10 yards of cloth from warp.

the take-up being .536 in 10 yards, or about 1/4th take-up. In this case, however, warp and

weft are supposed to bend equally, while actually the warp will do most of the bending.

In worsted cloths, the warp being almost straight, the yield of cloth will be almost length for length, i.e., 100 yards of warp will yield almost 100 yards of cloth.

In the case of worsted cloths, the weft being straight throws all the bending upon the warp; but if the cloth is constructed strictly according to the principles laid down, the calculations for take-up will be precisely similar to the calculations for take-up in ordinary cloths, since the diameter of the yarn, and the altitude of the triangle, do not affect the result in the slightest, the take-up being relative to the base and hypotenuse of the triangle formed. Note should, however, be made of the fact that size of the weft, picks per inch, shrinkage of the wool, and weighting of the warp beam all influence the take-up in some degree.

In weaving striped patterns of intricate construction, such as crammed stripes, or any single cloths in which weaves are combined in stripe-form, the above principles are a good indication of what may be expected, and the need for an extra beam must be judged accordingly. Many weaves, however, of slightly different weaving capacities may be woven from the same beam, if the warp is good; but, of course, all the strain will go upon the threads weaving with the most intersections; thus the extent of the various weave-stripes may influence the use or otherwise of our extra beam.

A method employed at times with success for these and backed cloths is to beam certain sections of the warp slacker than the other sections. The use of an extra beam may, by these means, be avoided; but its application is very limited.

In dealing with backed and double cloths, the same principles apply, with certain modifications. For example, working out, on the lines already laid down, a two-and-two twill-face cloth with 8-end sateen back, the following result is obtained:—

70 yards of warp \div 1/4 = 63.64 yards of cloth.
64 yards \times 1/4 (= 3) = 67 yards of backing-warp
to yield 63.64 yards of cloth.

The take-up in the case of double cloths will be a compound of the single and backed cloths; the take-up in both face and backed cloth being first calculated and then the take-up for ties, whether in warp or weft.

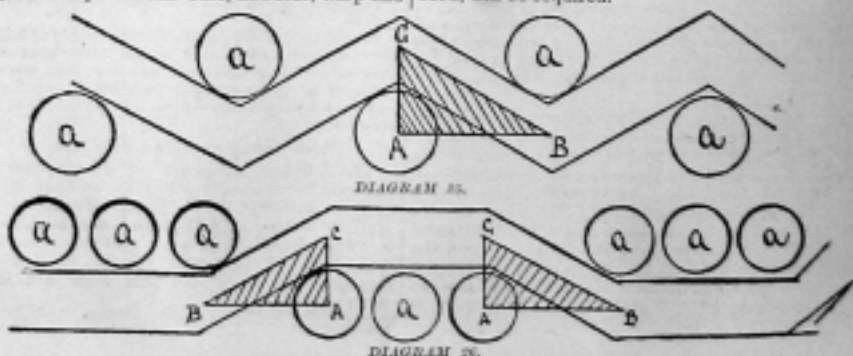
We are quite aware that practical men may offer some objections to the above system, which, to the best of our knowledge, is here attacked systematically for the first time; but when we state that the results here worked out coincide with the best results obtained in practice, it must at once be admitted that there is something in the theory, and that it is worthy of the best attention.

(To be continued.)

NEW DESIGNS.

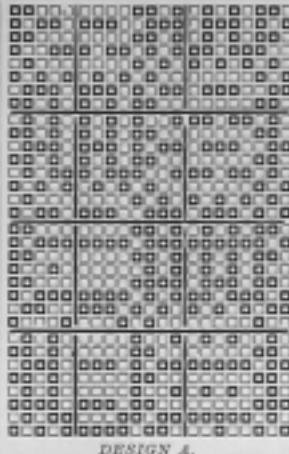
CANVAS CLOTH.

Design A is for a canvas cloth of a peculiar make, woven all grey, bleached, or piece-dyed in any or all the fashionable shades. It is on 8 shafts, 18-end draft, 18 to the round. We give particulars for one quality: 26 reed, 3 in a dent, 20's warp; 80 picks, 20's weft. These particulars may be varied; if a more open texture should be thought necessary, a finer grist of weft and warp, with less yarn in picks and reed, will be required.

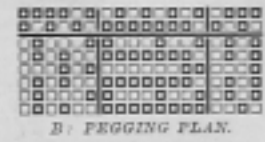
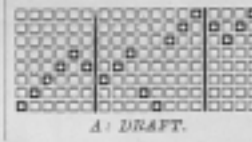


COTTON DRESS MATERIAL.

Design B will be found a novelty, either as a jacquard figure or for printing on the fashionable dark-blue ground with a white effect. We have given every salient point for carrying it out to a repeat, which can easily be done by observing the run and repeat of the figures in a diagonal form. This would form a very interesting study for those who wish to become proficient at designing. Space will not permit us to develop it fully, but quite sufficient is shown to give the idea of construction. Although the ground is shown as tabby or plain, it will be evident to practical manufacturers that a twill or satin ground may be formed, always observing that the figure is formed by the weft picks, the full black dots showing this effect. Should a satin ground be decided upon, it ought to measure, both by the warp and weft, the extent of the figure, so as to obviate any break in the runs. There is no figure, whatever space it may occupy; but some one of the satin twills will coincide with the figure: for instance, taking one hundred and eleven,



(rather a odd quantity of ends or picks to measure), the 3-shaft satin or twill ground would measure it 37 times for a repeat. If this design should be produced we would recommend for bleaching in white or light-dyed tints, that it be woven in the grey, with 40's warp and weft, 96 ends and picks per inch. This will give with a good finish, a neat and very handsome effect on a good foundation. If dark blue ground (either plain or satin), then the weft must be well bleached white, or be cream, very light primrose, straw, or maize; but under any colour arrangement it will be found requisite to have the colours fast and very pure. A fabric formed from the particulars given ought to be satisfactory, either for the home or export trade. We simply give these details from a belief that they will suit buyers, but of course the goods may be made from this design to meet many varieties in the way of vestings, negligé shirtings, blouses, etc.



Machinery and Appliances.

IMPROVED PATENT FRINGING MACHINE.

MAKERS: MESSRS. BARKER, SNAPE, AND
WILSON, PHETHEAN-STREET WORKS, BOLTON.

In many of the textile industries it is becoming common for the manufacturer to carry the article through more and more of the finishing processes, so that it is now in many instances the case that the manufacturer places the article in the hands of the merchant and dis-

all descriptions there is no need to be at all in doubt in regard to this. For decorative purposes fringes have always been largely in requisition, and an easy method of making them, either in connection with or apart from the article they are to ornament, and afterwards attaching them, has long been a desideratum.

We have much pleasure in drawing the attention of our readers in the various textile trades to the recent invention of a greatly improved fringing machine by Messrs. Barker, Snape, and Wilson, Phethean-street Machine Works, Bolton, hosiery machine makers, who have already become well known for their improvements in knitting and other various hosiery machines.



IMPROVED PATENT FRINGING MACHINE.—MESSRS. BARKER, SNAPE, AND WILSON, BOLTON.

tributor without the necessity of the intervention of the so-called finisher at all. The facility given for ornamentation is also inducing manufacturers to take up the art of embroidering, fringing, and otherwise decorating their fabrics in a manner and to an extent that would surprise manufacturers of the old type. Unquestionably this is a wise course on the part of English manufacturers, especially as the further they can carry their productions beyond the plain article the more secure will they be from competition. The only thing needed in this respect is to be assured that the taste of the world of consumers is advancing correspondingly and on parallel lines, so as to ensure sale for the articles produced. In textile matters of

The fringing machine as hitherto known has been a crude article indeed, heavy and very complicated in construction, and difficult to keep in good working order. So troublesome indeed was it to manufacturers, that one of these gentlemen, knowing the inventive capabilities of this firm, brought the desirability of the improvement of the machine under their notice, with the result that it was taken in hand and improved to such an extent as to become, practically speaking, a new machine. So gratifying was the alteration to this gentleman, that he immediately ordered all he required, and after several months' experience of them, declares them to be far and away the best he has ever seen.

The improvements effected consist in the construction for the machine of a neater and more compact head than that of the old type. All the mechanism usually placed upon the base of the arm of the machine for carrying and holding the fringe has been dispensed with, and is substituted by a small spring foot mounted on a horizontal needle and shews near the head of the machine. This improvement alone has done away with a lot of the complexity of the old form, and one-half of the liability to derangement of the parts and the consequent necessity for repairs. Next, the inventors have introduced a new form of cam for driving the lever that actuates the fringing hook. This lever is seen mounted upon the base of the arm in front of the gearing by the hand wheel. This is an important improvement, as the reciprocal movement of this lever is rendered much easier, thereby diminishing the force required to drive it, reducing the wear and tear of the parts, and prolonging the life of the machine, whilst at the same time the work produced is greater in quantity and better in quality. The inventor further dispenses with the loose brackets and other parts usually attached to the slide carrying the fringer hook, and also removes the double-eyed connecting rod and studs of the old arrangement, all of which added greatly to the complication. These parts are substituted by a single one, a one-eyed connecting link screwed for two lock-nuts. This is shown at the base of the spur pinion. In the old type of machine the fringing hook was forged with the boss and bowl lever in one piece, whilst the hook being subjected to a great deal of friction was apt to wear away very quickly, necessitating a new lever or the worn hook being cut away and a fresh one being welded on—a job for a blacksmith, and requiring an expert fitter to finish. This clumsy arrangement has been substituted by a steel wire hook, which is inserted into a hole prepared for its reception in the bowl lever. This can be adjusted as required, or replaced by a new one as readily as a needle can be set in an ordinary sewing machine. This effects a great saving of time and cost in repairs. In addition to these all the spur wheels and pinions are cut from the solid discs, thus ensuring perfectly formed teeth and smoothness of working. All the parts are made to templates, and special tools have been designed and constructed to ensure the greatest accuracy.

The requirements of users of this machine have been carefully studied. The length of the fringe can be easily regulated, and the mechanism for clearing away the fringe after it has been formed works from one presser foot; this removes a source of great annoyance found in the old machine. All the acute working parts of the machine are done away with, which greatly reduces the enormous wear and tear of the machine and the necessity of constant skilled supervision, as in the old machine. In addition to this there is an increased production of from 10 to 20 per cent. We strongly commend the merits of this machine to all users, who will obtain any further information they may require on application to the makers as above.

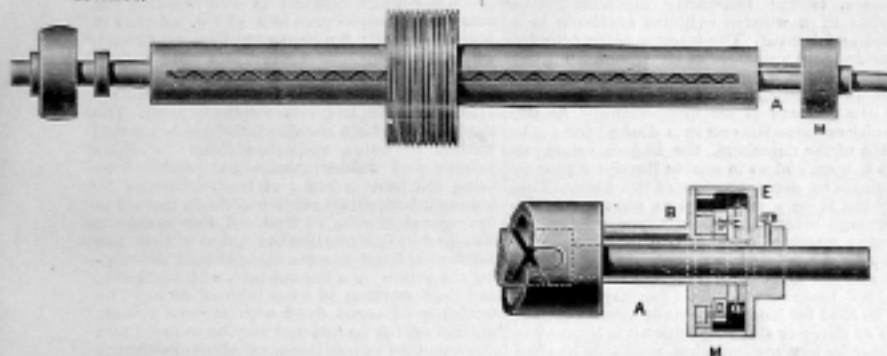
We learn that Messrs. W. T. Glover and Co., of Salford, Manchester, have just introduced a new winding machine for very fine wires to be wound on bobbins with bevelled flanges similar to spools for sewing cotton and silk. They have long made wire winders for bobbins with parallel flanges, but have introduced this machine with a new differential traverse motion and stop motion to stop the bobbin when the wire breaks, to meet the requirements of those who wish to wind on bobbins with bevelled flanges. They will be glad to show samples of bobbins wound on this machine.

EMERY WHEEL GRINDER, WITH NEW PATENT DIFFERENTIAL MOTION.

SOLE MAKERS: MESSRS. DRONSFIELD BROS., LIMITED, ATLAS WORKS, OLDHAM.

As in most pieces of mechanism, so in the traversing emery wheel card grinder there has hitherto been something left to be desired. We need not dwell upon the defects of the mechanism known as the "Horsfall," beyond saying that its liability to have its action arrested by the presence of any obstruction upon the tube has been a serious drawback, as when it begins to swing round upon the shaft, the grinding disc ceases its traverse, and so grinds too deeply upon one place. The noise it makes is also an objectionable feature, though of less magnitude than the preceding.

Messrs. Dronsfeld Bros., whose reputation for the production of everything and every appliance connected with card dressing and grinding is known wherever cotton spinning on the modern system has found a footing, have long been familiar with these defects, and have at last been led to make an attempt to obviate them. In this they have perfectly succeeded, by means of the invention we are about to describe.



EMERY WHEEL GRINDER, WITH NEW PATENT DIFFERENTIAL MOTION.—MESSRS. DRONSFIELD BROS., LIMITED, ATLAS WORKS, OLDHAM.

The patent emery wheel grinder represented in our illustration is essentially the same as the "Horsfall" grinder, but in its details contains many improvements. The tube is constructed of a larger diameter, the increase being from 2½ to 3 inches, and the screw or loose end of the grinder is made with an increased length of bearing, this being more fully shown at a in the sectional drawing. This bearing, it will be observed, extends through the grinding step, and thus provides a solid bearing for the tube in the grinding step. The grinding disc is fitted with oil pads, which prevent the dust accumulating on the tube or from entering the boss of the grinding roller, and so giving rise to obstruction. With this arrangement the tube is constantly cleaned and oiled by the pads, which obviate the risk of the grinding roller stopping in its course, or of oil dropping on the card clothing, which is so destructive to the latter when the foundation contains any indiarubber. So far for its general construction.

In order, however, to secure the most perfect action in traversing the disc, Messrs. Dronsfeld have invented and patented a new differential motion by which the disc is traversed. The external appearance of this is shown at n on the larger illustration, and in section at m in the smaller view. In the new arrangement there is a disc plate n fitted upon the socket or long bearing a, to which we have previously referred. This disc carries a semi-tubular projection, which is seen extending towards the left from its outward face. This projection goes through the step, into which it is constructed to fit in such a manner as to prevent the disc to which it is attached from revolving. The disc or plate

also carries a boss on its opposite face, which is so constructed as to form an eccentric. On this is mounted a pinion which is actuated by the intermediate or compensating driver o, which in turn receives motion from the driver c, which it will be seen is screwed fast upon the end of the long bearing a. On the screw shaft and close up to the long bearing a is fitted and screwed fast a cover z. The inner face of this cover constitutes an internal wheel which gears with the pinion previously mentioned, and is driven by it. By this arrangement the screw shaft is driven at a slightly reduced speed from that of the tube, and thus a slow traverse is given to the grinding disc. This arrangement only requires one pulley to drive it, thus obviating the necessity of having two, one at each end, which is required in the old arrangement. We had the pleasure of inspecting the invention at week, and can testify that it does its duty very easily and smoothly, and without the noise incident to and inseparable from arrangements in which the results desired are obtained by gearing only.

The makers will be glad to afford any further information that may be required, and will be pleased to shew it at work on application as above.

MESSRS. JOHN HETHERINGTON AND SONS, LIMITED, VULCAN WORKS, ANCOATS, MANCHESTER.

This old and well-known firm of cotton machinists continues, with even added force, the rapid development that has so markedly characterised it during the past few years. This fact is strongly manifested in the greatly increased trade it is doing both for home and foreign markets, the annual turnover having almost quadrupled during the past seven years. As might be expected, this increase has necessitated during that time constant extension, which has been going on until all the available space in and upon the ground already occupied by the Vulcan Works has been thoroughly utilized. Still the pressure has continued, and to meet the increasing requirements further large additions have been decided upon.

Contiguous to Vulcan Works, and divided from them only by a branch of the Rochdale Canal, stand, or rather, we should say, recently stood, for they have nearly all been dismantled, the extensive cotton mills of the late firm of Messrs. J. and J. L. Gray, fine spinners, who retired from the trade 12 or 13 years ago. These mills occupied a site of 4½ acres, all of which has been acquired by Messrs. Hetherington and Sons, and annexed to the Vulcan Works. The firm have already got the mills taken down to their basement in clearing them away. On one portion of the site the firm are erecting a large foundry, and this is already in a forward state, as part of the roof will soon be put on. This will be 300 feet long by 200 feet broad, thus containing 30,000 square feet of space. It will be divided into two bays. The

firm will furnish it with their own latest type of power cranes, which will be driven by electricity. It will also contain four six-foot cupolas. Alongside the foundry will be placed new dressing and grinding shops. New boiler and engine houses are being erected. The former will contain three steel Lancashire boilers adequately furnished with Green's economiser pipes. (It may not be generally known that the late John Hetherington, the founder of this firm, was the inventor of the now universal Lancashire boiler.) The engine will be of 350 horse power, and the order for this has been entrusted to Messrs. J. and E. Wood, the eminent engineers of Bolton.

The remainder of the land has been laid out for new erecting shops, etc., principally for the fly frames, which have hitherto been made in a department of the Ancoats Tool Making Establishment, another important section of this firm's business. This was owing to the want of the necessary accommodation at the Vulcan Works. The construction of the cotton machinery will thus be brought all within one enclosure.

Included in the extensions is a large new plant for making mule and ring spindles, of which the production will be, of the former 10,000 per week, and of the latter 5,000 per week, of the semi-elastic type made by the firm. A large new plant is also being laid down for making all the top rollers that will be required.

The alterations we have described will render the Vulcan Works very compact and self-contained. The added land is surrounded on three of its sides by a canal, which will permit the firm to receive and unload pig-iron, coal, coke, sand, etc., by and from water, the cheapest form of carriage. In addition to this it is intended to introduce a siding from the Midland Railway Co.'s goods yard near to.

When these alterations are completed and the additions got to work, there will be required an addition of at least 500 hands, which will bring up their complement to 3,000. The great capabilities of the firm, already well known in the way of speedily fulfilling large contracts, will be correspondingly further enhanced.

Bleaching, Dyeing, Printing, etc.

THE MECHANICS OF DYEING.—I.

In previous papers published in *The Textile Mercury* there have been discussed, from a chemical point of view, the various processes of dyeing cotton, wool, and silk, in which an endeavour has been made to point out the principles whereon each method of dyeing is based. In the present series of papers it is proposed to deal more particularly with the mechanical side of the various operations of the dyeing of textile fibres and fabrics, and to indicate the principles that underlie them.

Textile fibres and textile fabrics are dyed in various conditions; thus, cotton and wool are sometimes dyed in the loose or raw condition; all fibres of cotton, linen, jute, wool, silk, etc., in the form of yarn or thread; and all fibres are dyed after they have been woven into textile fabrics of all kinds.

In which of these conditions they are dyed depends upon a number of circumstances; thus, for instance, if the finished woven fabric is to be of a self or single colour, then it is generally best to dye it after weaving; on the other hand, if the woven fabric is one containing a design of any kind in colour, then it is necessary to weave it with coloured warps and wefts, and therefore these are dyed in the thread condition. Now it must be obvious to any person that the methods and appliances which can be used with success in dyeing loose cotton or wool, will not work well with yarn; and, similarly, what is good for yarns will not do for piece-goods. The object

of the dyer in all cases, is to obtain level or even dyeing. In the early days of dyeing all was done by working with manual labour—hand-dyeing as it is called. Although this practice has even now not been entirely superseded, yet dyeing machines are coming more and more into vogue, but it is doubtful whether hand-dyeing will ever be entirely done away with. We shall now discuss the various mechanical methods adopted in dyeing, stating the advantages and disadvantages of each method, indicating the principles that underlie them, and possibly throwing out a hint or two as to the lines on which any improvement must be made. In its main principles, dyeing is a simple operation. Carried out on a small scale it simply consists in the immersion of the fibre or fabric to be dyed, in a solution, cold or hot, of the dye-stuff used, and working the material about with a view to the equal impregnation of the fibre or fabric with the dye liquor, so as to ensure evenness of shade in the finished material. Uneven dyeing is the *malis* of the dyer; every precaution must be taken to avoid it. Extending the same principles to working on a large scale, we require, firstly, suitable vessels or vats to hold the dye liquors and to conduct the dyeing; secondly, means of heating the dye vats; and thirdly, means of working the fibre or fabric which is being dyed in the dye liquor. It will be shown how all these are brought about. Although there are no very essential differences between the mechanical principles of dyeing cotton, wool, silk, or other textile fibres, yet it may perhaps be more convenient if the subject be considered under the heads of (1) cotton dyeing, including other vegetable fibres under this head; (2) wool dyeing, also including other animal fibres of similar character; and (3) silk dyeing.

DYEING OF COTTON.

Cotton is dyed in three conditions: as raw or loose cotton; thread or yarn; and in the piece. Each of these conditions will be dealt with separately.

Dyeing of Raw Cotton.—Cotton is the only vegetable fibre that is dyed in the raw or loose condition. Owing to certain difficulties which will be pointed out, raw cotton dyeing is not carried on so extensively as some of its advantages would suggest that it ought to be. As cotton does not require that the dye liquor should as a rule be maintained at the boil during the process of dyeing, cotton dyeing is usually carried on with warm liquors. These are made by dissolving the various dye-stuffs in hot water, which is heated in a separate vessel, so that often no provision is made for heating the dye vessel. In hand-dyeing the loose cotton is simply raked about in the dye vat until it is dyed. The troubles that arise in dyeing loose cotton are many. In the first place, some parts have a repellent action on the dye liquor, which prevents the penetration of the liquor into the body of the fibre; and as other portions have not this repellent action it follows that uneven dyeing must result. This is due to the fact that the cotton fibres naturally contain some grease, which is more abundant in some portions than others; and as grease and water are naturally antagonistic to one another, it follows that those parts of the cotton fibre which contain the most grease will exert a repellent action on the dye liquor, with the result stated above. This defect may be remedied by a previous scour of the cotton in alkaline leys, which removes the grease. Another disadvantage of loose cotton dyeing, arises from a matting of the fibres together, which tends to prevent the penetration of the dye liquors to the centre of the masses of clotted fibres, which are consequently often left white. Then again this matting of the fibres introduces trouble in the subsequent process of carding the cotton in spinning operations. The matting increases with too much handling of the cotton in the dye-bath, or with a mode of working which tends to draw the cotton together into lumps or masses. The right mode of working is that which tends to open the cotton out, so that every part is exposed to the action of the dye liquor. The only apparatus required in this hand-dyeing of loose cotton is a dye vat of suitable size, and raking tools. It is not necessary that any arrangements be made to heat the dye vat, but if such should be required

—as for instance in the use of direct dye-stuffs, such as Congo or Chrysamine or Titan pink—the best plan is to arrange a perforated false bottom, and to run an open steam pipe underneath this. A fuller description of a dye vat will be given when dealing with the dyeing of yarns.

The objections which have been urged against hand-dyeing of raw cotton have been remedied, or rather attempts in that direction have been made, by the use of mechanical appliances. It is scarcely possible to describe all those which have been made, or which are in use, as some are only used at particular works and are not offered in the open market. A good representative of such mechanical systems is that of Obermayer. In this the cotton is placed in a cylinder made of copper, down the centre of which passes a perforated pipe; this cylinder is perforated and is placed in another larger cylinder. By means of a pump all air can be withdrawn from the central cylinder filled with the cotton, and then the various scouring and dyeing liquors are run in through the central perforated pipe, through the mass of cotton, and out of the central cylinder, ready to be pumped back again. By this apparatus the matting of the fibres is prevented, and the dyeing is more level or uniform; on the other hand, it is difficult to match-off or dye to shade, which is easy enough in the hand method.

Another appliance, which is much used in America, is the Delahanty machine. This consists of a wooden cylinder revolving in a cylindrical dye-vat. The interior of the cylinder is divided into a number of chambers, from the sides of which project curved fingers; each chamber is partially filled with the raw cotton, and the machine is set in operation. As the cylinder revolves the cotton is dashed from side to side of the chambers, the fingers serving to keep it open and so to enable the dye liquor to penetrate to every portion of the fibre. This machine is very successful in use: it has the advantage over the Obermayer system of allowing matching-off to be readily done.

It may be pointed out that while the hand vats and the Delahanty machines can only be used for loose cotton, the Obermayer system can be used for loose or partially treated cotton, such as sliver or slubbing, which it is impossible to treat by any method that works or handles the materials.

(To be continued.)

THE USE OF MINERAL COLOURS IN DYEING AND PRINTING.

The use of mineral colours, such as iron buff, chrome yellow, chrome orange, etc., in the dyeing and printing of cotton, has decreased to a very considerable extent since the introduction of the coal-tar colours, which is chiefly due to the greater ease with which brilliant colours can be produced on the fibre from the latter class of dye-stuffs. There is nevertheless no doubt that in many cases mineral colours may be produced with advantage on the fibre.

The production of 'iron buff' from iron salts is still carried on to a considerable extent, on account of its great cheapness and fastness against air and washing. The only coal-tar colours which, probably, are capable of producing similar shades are toluylene orange and cresotine yellow, and these are much used in padding work on calico. The 'buff' obtained from these two dye-stuffs is much superior to 'iron buff' as far as regards resistance to acids. The production of an 'iron buff' is very simple: it is sufficient to treat the cotton to be dyed with a solution of an iron salt, and then to pass it through an alkaline bath. The iron salt commonly used is the nitrate of iron, a bath being made of 4° to 10° Tw. strength, in which the goods are worked; they are then whizzed, and passed through a bath of soda ash of 5° Tw., or a bath of lime may be used. Various shades may be obtained by repetitions of the process, or varying the strength of the iron bath.

On passing cotton dyed iron buff through a bath of yellow prussiate of potash, acidulated with sulphuric acid, very fine blue tints are obtained—the old-fashioned Berlin and Saxon blues, the depth of the blue being in proportion

to the depth of the iron buff. This blue is now rarely produced, as the artificial blues are easier to apply, give brighter shades, and are rather faster. The only advantage this blue possesses is that of being fast to acids, which may cause it to be of use occasionally. In dyeing this blue it is advisable to add to the iron bath 2% of tin crystals. The buff is fixed as usual in alkali, and the blue developed in a bath of yellow prussiate of potash, containing 2% of sulphuric acid.

Nature favours us in every respect with an abundance of yellow colours; they are very numerous among the natural dye-stuffs as well as among the artificial and mineral colours. Owing to the existence of such a variety of yellow and orange dyes, mineral yellow colours are only employed to a limited extent. The chromates of lead are almost the only yellow and orange pigment colours used, and are obtainable by the interaction of bichromate of potash and soluble lead salts. In practice these colours were first applied in dyeing in 1820, by Lassaigue; since then chrome yellow, and especially chrome orange, have been very extensively used in cotton dyeing, the colours being fast to light and washing, and exceedingly simple to produce. The modern benzidine and diamine dyes are, however, superseding the chrome pigments, although the latter are much faster to light. The process of dyeing cotton yarns with these chrome colours consists in well working the previously scoured yarn in a 4° Tw. solution of acetate of lead; the hanks are then wrung and, without washing, are worked in a cold bath of bichromate of potash or of soda and sulphuric acid; (usually for 10 gallons of water there are 4½ lb. bichrome, and 1½ lb. sulphuric acid). The shade having been obtained, the goods are well washed in water, and then dried. Golden yellows and redder shades are produced by using the basic acetate of lead, (obtained by boiling litharge with acetate of lead), instead of the normal acetate of lead. A fine orange is obtained by first treating the cotton in a 10° Tw. solution of basic or subacetate of lead, developing the yellow in a second bath with bichrome, and then working in a hot bath of lime. The tendency of yarns dyed with chrome colours to 'rub off' or be 'dusty' may be reduced to a minimum by oiling them. Cadmium yellow is rarely dyed on cotton, although nitrate of cadmium is used in calico-printing to prevent the sulphuretted hydrogen (given off by the albumen used in fixing) from damaging the printed chrome yellow. To produce it as a self-colour on cotton, the latter is worked for half an hour in a bath containing 4½% of cadmium chloride; then it is whizzed, and entered into a bath of sodium sulphide, when the yellow is developed. Two other mineral yellows suitable for dyeing cotton are antimony orange and sulphide of arsenic, but they are no longer used practically. The first is produced by impregnating the cotton with concentrated solutions of tartar emetic or oxalate of antimony, and then exposing it to the action of sulphuretted hydrogen, when good orange shades are obtained. If arsenic solutions be used, then a yellow is developed, which however is fugitive if treated with alkaline liquids. This fact, coupled with the poisonous character of the arsenic used, has prevented this colour from being used in dyeing.

Of considerable importance, especially in calico-printing, are the salts of manganese, for the production of a variety of brown shades, known technically as 'manganese bronze,' or 'bister.' The production of these colours depends on the formation of manganese hydroxide on the fibre. For this purpose the goods are passed through a solution of a manganese salt, and then through a bath of bleaching powder, when the brown develops. This process answers well for pieces, but is not good for yarns; for these, the best plan is to pass through a 4° Tw. strong bath of manganese sulphate, whizz, and then pass into a bath of potassium permanganate at 2° Tw. A good brown shade is obtained, which may be made darker by repeating the operations. On drying, these colours are apt to darken and become uneven, a fault that may be prevented by previously passing the yarns through a bath of acetate of iron at ½° Tw.—SOXHLET in the *Färb. Zeit.*

DYEING OF KNITTED FABRICS.—I.

The subject of the dyeing of stockings and other knitted fabrics is rarely treated in the journals devoted to dyeing. This is partly due to the fact that, viewed from a chemical standpoint, the dyeing of such fabrics is identical with that of any other kind of fabric, while whatever differences exist are due to the difference in the construction of the fabrics. We propose in the course of a few short articles to discuss various methods of dyeing knitted goods, and to give a few practical recipes for producing various colours and shades.

Hose and knitted fabrics are, if a soleism be allowed, dyed at one operation in the two conditions of yarn and woven fabrics. Of the former we do not intend to speak, as this does not differ in any way from ordinary methods of yarn dyeing. In some respects the dyeing of knitted goods in the yarn condition presents some advantages: there is a saving of trouble in the dyeing operations; there is a more uniform shade in the finished goods, which also retain their shape better; and there is less risk of felting in woollen goods, so that these remain more fleecy and open in texture. There are some disadvantages, the first being that in the process of weaving or knitting there is a tendency for the goods to get dirty, which dulls the shade and brilliancy of the colour, and renders a cleansing or scouring operation necessary. The advantages of dyeing the woven fabric lies in the fact that the finished goods are lighter in colour and more brilliant in appearance. On the other hand, there is the risk that the goods, especially woollen fabrics, will felt or mat and shrink, thus losing that open appearance and full feel which it is desirable such goods should have.

With these few preliminary remarks, we now proceed with our subject. Before woven fabrics of any kind can be dyed they must be cleansed, and if they are to be finished in pale tints it is necessary that they should be bleached. As it is advisable to subject the goods in question to as few operations as possible, it is preferable that any bleaching be done in the yarn condition, and it will be assumed that such has been done. For cloths which are to be dyed in dark colours there is no necessity for the goods to be bleached, but they must be scoured. Scouring is necessary before dyeing in order to eliminate all dirt, and more particularly any grease which may be in the goods, derived either naturally or during the process of knitting from the oil used to lubricate the machines. If any grease be left in it will prevent the proper dyeing of the goods, which will come up uneven in shade and deficient in depth of colour. Scouring is not a difficult operation, but requires to be well done, otherwise the results of subsequent processes are likely to be poor and unsatisfactory. Before scouring, all hosiery goods are turned with their face side inwards to prevent that side from becoming soiled or injured in any way; and they are "tacked" or marked by some convenient means, so that after scouring, etc., they can be readily sorted out in the proper lots of the same goods.

Scouring of hosiery goods made from cotton is usually done in the "dolly." A large tub is firmly fixed upon a table made to revolve by suitable gearing; above this in a framework are three beaters made of wood, which are connected with cams so that they may be lifted up and then suddenly allowed to fall by their own weight, the beaters rising and falling one after the other in a regular manner. By this arrangement, and the revolution of the tub, every portion of the goods which are being scoured comes under the action of the beaters. The goods are placed in the tub as level as possible, the scouring liquors are then run in, and the dolly is set in motion. A steam-pipe supplies the necessary heating power when required. The length of time will vary considerably, according to the character of the goods and their condition; from 1 to 2 hours is usually sufficient. For cotton the boiling is best done with a liquor of soap and soda, using per 100 lb. of goods about 1½ lb. of soda ash and 1 lb. of soap, cleansing at or nearly at the boil. For wool and half-wool hosiery, the use of soda is not admissible; soap guly should be used;

this ought to be a good quality of potash soap, using about 3 lb. per 100 lb. of goods. The temperature with woollen fabrics should not be allowed to get to the boil; from 160° to 180° F. is quite sufficient, the object being to reduce the risk of felting to a minimum. With silk or half-silk hose, soap only can be used, of which from 4 to 5 lb. per 100 lb. of goods will be required; the temperature may be raised to the boil. After the boiling, the goods must be well washed with clean water to free them from all traces of soap and alkali, as such, if left in, would affect the after processes of dyeing and finishing.

Besides the "dolly," other forms of washing machines can be used: as, for example, for hose, a revolving hydraulic washer; or for long lengths of knitted goods some form of open washer, in which the goods are treated in an open or broad form to prevent felting as much as possible. But as our intention is to deal with the dyeing and not the scouring of hosiery goods, we shall not, at present, deal more fully with this part of the trade; at some future time we may take up the subject and develop it.

(To be continued.)

FINISHING SHIRTINGS.—The following mixings are taken from a German contemporary. For ½ cloth: For 66 gallons finish, use 4½ lb. farina, 3½ lb. starch, 9½ lb. china clay, 30 lb. blanc fixe, 2½ lb. olein, 2½ lb. cocoanut oil, 2½ lb. soap, 1½ lb. stearine, 1½ lb. spermaceti, and 30z. ultramarine; bring to the boil, and boil for three minutes, when it will be ready for use. For ¾ cloth: 3½ lb. starch, 3½ lb. farina, 7½ lb. china clay, 3½ lb. blanc fixe, 2½ lb. cocoanut oil, 2½ lb. olein, 1½ lb. spermaceti, 1½ lb. stearine, and 30z. ultramarine; boil as before. For 1½ cloth: 25 lb. farina, 22 lb. starch, 3½ lb. china clay, 1½ lb. blanc fixe, 1½ lb. soap, 3½ lb. cocoanut oil, 1½ lb. spermaceti, 1½ lb. stearine, and 30z. ultramarine; boil as before. These recipes are quite German in character, and much more complicated than those used in this country.

A FRENCH BLEACHING AGENT.—The number of bleaching compounds used in France is very great, and now and again new ones are being patented, which, however, usually turn out to be but modifications of old compounds. The latest has been named chlorogen, and, like a good many more, has been patented—a fact which gives us the opinion that the French patent office, like our own, will patent anything. The new product is obtained by treating bleaching powder with soda lye, whereby a solution of sodium hypochlorite is obtained, having a strength of from 30 to 32 French chlorometrical degrees, and for which excellent bleaching properties are claimed. A description is given of an apparatus in which this new chlorogen is to be used. It consists of a closed vessel made of zinc—we should not like to insure its life; the textile fibres are introduced, the air pumped out, and the bleaching bath or scouring material run in. The scouring with soda lye takes about 10 minutes, and the treatment with the chlorogen 1½ hours, after which the materials are allowed to lie exposed to the atmosphere for a day, and they are then finished in the usual way.

BLEACHING WOOL is carried on by means of sulphuric acid, used either in the form of gas, obtained by burning sulphur; or in solution, obtained by treating bisulphite of soda with hydrochloric acid. The bleach remains only so long as the wool remains charged with the acid; when this is removed by washing the yellow colour of the wool comes back again. By using peroxide of hydrogen, however, this can be avoided. The new process is worked somewhat as follows: The wool is first well scoured, so as to remove grease; then it is immersed in a bath made of—peroxide of hydrogen, 12 vol., 1 pint; water, 2 pints; and sodium silicate, 40° Tw., ½ pint; in which it remains for 24 hours, when it will be found to have become of a good white. Should this not be the case, the operation may be repeated. Another plan is to make a bath in—peroxide of hydrogen, 12 vol., 1 pint; water 1 pint; and sodium silicate 40° Tw. 10z.; and then steam for 2 minutes. The white obtained by this process is better than that got with the sulphur method; it is quite as good as regards colour, but it has the distinct advantage of being permanent.

News in Brief.

ENGLAND.

Accrington.

On Monday the members of the Accrington Trades Council appointed a deputation to wait upon the Accrington Weavers' Executive and request them to withdraw their notice to leave the council. The Weavers' Association are withdrawing owing to increased levies for the council's working expenses.

The following are the results of the examination in Cotton Weaving students attending the Mechanics' Institute, Mr. James Holmes being the teacher:—First class (ordinary grade): H. Rhodes, P. Titherington, D. Law, W. E. Robinson, C. Wright, H. Hoop, J. H. Cooper, S. Shepherd, H. W. Thompson, H. J. T. Holland. Second class (ordinary grade): A. Ingham, A. Bentley, A. Asplen, J. H. Greenwood, G. Budge, I. Hunt, E. T. Whitaker, F. G. W. Holthouse.

Bradford.

On Wednesday, at the Bingley Petty Sessions, Messrs. Walker, Holmes, and Co., worsted spinners, Ling Bob Mills, Wilton, were summoned for employing children without having obtained the certificate of school attendance for the previous week. There were five cases against the defendants, who made no appearance.—A fine of 10s. and costs was imposed in each case.

The following results of the examinations conducted by the City and Guilds of London Institute at the Bradford Technical College are to hand:—*Wool Dyeing*.—Honours, first, S. J. King. Ordinary grade, first, W. Frankish; second, T. A. Cockin, J. E. Shaw, A. H. Frankland, H. E. Briggs, S. Ansdill. *Silk Weaving*.—C. H. Wadsworth, ordinary, second. *Wool and Worsted Spinning*.—Honours, first, Robert Lawson, J. H. Hadleston. (Clothworkers' second prize of £5 and bronze medal), Fred Jowett. (Clothworkers' first prize of £3 and silver medal). Ordinary, first, J. D. Tibbits, A. Schmidt. *Clot Weaving*.—Honours, first, H. Harker, H. Oakley, John C. Arnold. (Clothworkers' second prize, of £5 and bronze medal); second, R. W. Storey, J. W. Wonnop, H. Holroyd, C. Wetherling, J. D. Tibbits, E. C. Badfield. Ordinary, first, B. Gawthorpe. (Clothworkers' prize of one £1 and bronze medal), James Naylor. (Clothworkers' prize of £2 and silver medal), W. H. Kay, E. Jowett. (Clothworkers' prize of £2 and bronze medal); second, A. Lord, T. Brown, A. W. Artingstall, F. W. Kennish, R. H. Varley, C. H. Haigh, E. Child, S. Denson, H. Frintley, W. Frankish, H. Biggs, A. F. Hill, T. W. Newton, J. A. Lancaster, H. Mitchell, and James Colledge.

Burnley.

The following are the results of the examination in weaving of the students attending the Burnley Technical School:—Honours grade, first class: C. Hargreaves, L. Thumber. Honours grade, second class: J. R. Turner, J. A. Metcalf, W. E. Baldwin, W. H. Guthrie, C. Askeston, James Sagar. Ordinary grade, first class: K. Tibbott, James Smith, H. K. Nuttall, F. Atkinson, W. Haythornthwaite, J. E. Beakley, F. Hitchon, W. Pollard. Ordinary grade, second class: G. Clark, K. Parker, J. Elos, L. Sutcliffe, J. Nuttall, M. H. Badger, W. R. Coatsree, W. Pemberton, T. Hoop, W. Waring, J. Jackson, C. Rafferty, C. F. Simpson, W. Roberts, J. Riley, John Grey, R. H. Tatham, H. Ashworth, F. Foulds, J. Heaton, J. Dugdale, J. Abock, H. Ashworth, J. E. Lawson, J. Foulds, B. Slater, J. W. Burwin. Teacher, James Holmes.

Bury.

The profit for the past six months of J. K. Schofield and Co., Ltd., Clarendon-street Mills, Freetown, Bury, is £675, and a dividend of 2s. per share is to be paid.

The half-yearly report of the Wellington Mill Manufacturing Co., Ltd., Elton, shows a loss of £2,082. This includes £886 allowed for depreciation, and £594 interest.

The firm of Meors, Twoadale and Farrer, cotton manufacturers, of Britannia Mills, Tottington, gave their overlookers and other assistants a free trip to Blackpool from Saturday until Sunday night. The party left Woodfold at 2-15 on the Saturday afternoon.

The Bury and Elton Commercial Co., Ltd., report that after allowing £1,300 for depreciation, there is a profit on the half-year's working of £105, which amount they propose carrying forward to next account. £179 has been charged to depreciation account for renewal of machinery.

The half-yearly report of the Pool Spinning Co. recommends the payment of 10 per cent. on the preference shares. The profit was £1,410, and £574 will be carried forward to the next half-year. The engines of the new mill have been started, and in two or three weeks cotton will be put through the machinery.

The annual meeting of the members of the Incorporated Association of Municipal and County Engineers was held in Bury on Thursday and Friday, and will be continued to-day. Mr. J. C. Cartwright, the Bury borough surveyor, is president of the association. Various workshops and surrounding places of interest have been visited, and papers have been read on the Factory and Workshops' Act of 1897, etc.

Last week a sub-committee of the Employers' Federation of Bury met a committee representing the employers, at the Bury and Elton Commercial Co.'s mill, Elton, with a view to arranging the dispute. It was ultimately suggested that six grinders should be employed as formerly, but that the lap carriers should give place to a boy to carry "the fly," and a cotton mixer, the grinders to be relieved of cotton mixing, and the wages to remain in the aggregate about the same as before. The meeting was adjourned on the understanding that this proposition would be considered.

Cleekheaton.

At the July meeting of the Chamber of Commerce, on Tuesday, the secretary called attention to the fact that under the new Factory and Workshops Act the standard for full-time labour in the Cleekheaton district, at 23 years of age, would after the first of September next be the fifth instead of the fourth, as at present.

Mr. Walter Pullan, solicitor, Leeds, has just settled five of the claims in connection with the Marsh Mills disaster which occurred at Cleekheaton on the 24th of February last. The cases consisted of a daughter killed and a daughter injured in each of two houses, and a son killed in another. The amount of compensation paid in all the cases was £295—£100 for each of the daughters killed, £20 for one of the young ladies injured, and £25 for the other. In the case of the son killed £50 compensation was paid.

Denton.

Messrs. John Hetherington and Sons, Limited, Valton Works, Manchester, who are furnishing the Alpha Mill Co., Limited, with the machinery for their new mill, have commenced delivery. The mill will contain 32,000 mule spindles and 22,000 ring spindles, with all the latest improvements. Messrs. Hetherington are supplying everything from the bale breaker to the finishing machines.

Glossop.

The results of the technological examinations are as follows:—*Cotton Weaving*: E. Osbaldiston, J. E. Pickup, S. Knott, and Joseph Marsden, all second class ordinary. *Cotton Spinning*:—Honours grade: T. W. Lamb, W. Rowbottom, and F. Hindle. Ordinary grade: first class: W. A. Hall, J. W. Chadwick, and W. Wisterlinton. Second class: J. Littler, J. Sharkey, J. Hoyles, J. H. Parker, T. Barnon, and Jesse Stafford. W. A. Hall has been awarded the first prize of £2 and the silver medal in ordinary grade. The teacher is Mr. Thomas Thornley.

Heywood.

A profit of £146 has been returned by the Heywood Spinning and Manufacturing Co., and a "div." of 3 per cent. paid.

The Hean Clough Cotton Manufacturing Co. report a loss of £205 18s. 8d., which is increased by bad debts to £231 4s. 7d.

The Moss Foundry, Heywood, which has for very many years been worked by Mr. James Mills, has been formed into a limited concern, with a view to a development.

Messrs. John Hetherington and Sons, Limited, Manchester, are just commencing the delivery of machinery to the Derby Mill Spinning and Manufacturing Company. The machinery is arranged for spinning a good quality of 63's twist and 80's web.

The directors of the new New Mill Co. are sanguine that one-half of the machinery will be at work by the end of the present month. The yarn produced appears to be giving satisfaction and gaining a fair position in the market, and great encouragement is taken from the results obtained from the machinery started. Eleven pairs of mules and proportionate preparation machinery have now been got to work.

The following successes in the examinations in connection with the Technical School at Heywood have been communicated to the Committee:—*Cotton weaving*: First-class Ordinary, Kershaw, Jackson, and J. Bridge; second Ordinary, R. Heywood, H. Collins, J. Holt, and H. Fox. *Cotton spinning*: First Ordinary, S. Halton, J. Shepherd, H. Mills, and W. E. Parker; second Ordinary, J. Metcalf, E. Wild, T. Hilton, T. Kershaw, and J. H. Ellis; second-class Honours, J. Loni, W. Chadwick, and E. Tattersall.

Messrs. Richard Kay and Sons, Limited, after allowing depreciation on the whole of the buildings and machinery, including the new ring frames, declare a profit of £204 8s. 4d., which the directors recommend should be carried forward to next half-year. Only that portion of the mill engaged in the Nottingham hosiery trade has been working for five months; the other portion of the mills have been undergoing

necessary alterations to adapt them to ring spinning. The directors say they have already produced samples of extra-hand twist, which have been submitted on the market, and have been regarded favourably and satisfactory orders of considerable weight have been booked. There are now 9,405 ring spindles ready for work, and in the course of a fortnight it is expected that the whole of them will be in full operation.

The strike of fustian weavers at Blackpits Mill, Norden, near Heywood, has now entered upon its seventh week. The dispute arose owing to one of the weavers being fined for work alleged to be bad, and afterwards being discharged when he objected to paying the fine. About 300 looms are stopped, and the weavers are in receipt of strike pay from the Heywood, Cudleton, and Norden Weavers' Association. Mill collections have also been organised throughout the district, and grants have been made to the strike fund from the Bury, Clitheroe, Glossop, and other Weavers' Associations. In a report, the Committee of the Heywood Association say:—"The strike is to stop the practice of fining weavers, unless it can be shown to be for wilful damage; to obtain a hearing by the Society's officials on behalf of the workpeople, which in this case has been refused; and to protest against money being taken in fines unless the weavers have been informed beforehand that such an abatement would be made."

Holmfirth.

On Saturday afternoon, foundation stones of a new Technical School for Holmfirth were laid by Mr. James Marsden, of Wigan, a native of Holmfirth; and Mr. Swire Smith, of Keighley. The estimated cost of the new building is about £5,000. Mr. Marsden has contributed £500 towards the building fund, and, with other contributions, only a few hundred pounds will be left to be collected. Saturday's proceedings commenced with a public luncheon in the Town Hall, when over 100 of the principal residents were present. Afterwards, at the stone-laying, the architect presented a handsome silver trowel to Mr. Marsden, and the contractors made a similar presentation to Mr. Swire Smith. An adjournment was then made to the Drill Hall, where speeches on technical education were given by Messrs. Marsden and Smith. Votes of thanks were accorded these gentlemen, on the motion of County Councillor H. Butterworth, J.P., seconded by Mr. F. Turner, and the proceedings then terminated. The Marquis of Ripon had promised to lay one of the stones; but, owing to the death of Lady Mary Vyner, he was obliged to postpone his visit until the school is publicly opened.

Haslingden.

Shareholders' meeting of four of limited weaving companies, ranging nearly 6,000 looms, were held on Saturday, and their balance-sheets show that during the past six months this branch of the cotton trade has been worked at a loss. The Commercial Company, Limited, of Holden Vale, Fair's, and Commercial Mills, reported a loss of £694, further increased by £135 arising from claims in yarn contracts, bringing the adverse balance to £829. The Hean Clough Manufacturing Co., Limited, reported a loss of £231. The Lonsdale Industrial Manufacturing Co., Limited, reported a loss of £924. The Hargreaves-street Manufacturing Co., Limited, one of the best dividend-paying companies in the district, reported a profit of £53 but, with a balance in hand of £428, decided to pay a dividend of 2s. per share and carry forward a balance of £246.

Heckmondwike.

At a meeting of the Chamber of Commerce on Tuesday, a letter was read from the Bailie Chamber expressing the opinion that there was no need for a board of conciliation in the heavy woollen district, and declining to have anything further to do with the question; but a communication from the Trade and Labour Council of the Spen Valley Division asked the Chamber to receive a deputation respecting the proposal to form a board of conciliation for the district. Pending the decision of a joint meeting of the chambers of the heavy woollen district upon the former question, both letters were held in abeyance.—Mr. Stiel, who had acted as hon. secretary to the Chamber for more than eleven years, vacated the position, and was awarded the hearty thanks of the Chamber for his invaluable services. Mr. W. E. Clarke was appointed his successor.

Keighley.

A special meeting of the Chamber of Commerce was held on Monday, Mr. J. C. Horsfall presiding. There was a good attendance of members. The President, as one of the delegates to the Congress of Chambers of Commerce of the Empire, held in London last month, gave an exhaustive report of the main proposals before the congress, showing that while the assembly were of opinion that it was expedient that arrangements should be devised for bringing about a closer union between England and the colonies, a proposal in favour of a fiscal union on a basis of preferential duties was negatived. Mr. Robert Clough also gave some account of

the hospitalities of the Congress. The thanks of the assembly were given to the delegates, on the motion of Alderman Hattersley, seconded by Mr. Swire Smith.

Leeds.

Early on Saturday morning damage to the amount of over £10,000 was done by fire at the Barley Vale Mills, Weaver-street, Kirkstall-road, Leeds. The buildings and the machinery were the property of Mr. R. Schofield, who let them off to various tenants. The only part of the structure left standing was the bare walls. The tenants of the respective floors were Messrs. Kayser and Taylor, Messrs. Tennant and Rodley, and Messrs. D. Briggs and Co. The business of spinning, weaving, and scribbling has been carried on there. The damage is said to be covered by insurance.

London.

Messrs. H. and M. Southwell, Limited, carpet manufacturers, Bridgenorth, have removed their London Offices to 54, Great Marlborough-street, W., their requirements having outgrown the space at their disposal at 276, Oxford-street.

Loughborough.

At the Petty Sessions, on Tuesday, Messrs. J. and S. Harriman, hosiery manufacturers, Shephed, were also charged with breaches of the Act by employing Elish Bennett and Maria Savage after 7 p.m. in a factory at Shephed, on the 1st inst. Mr. W. Moss for the defendant, pleaded guilty. The Inspector said he visited the place at 7-10 p.m., and found the two women at work in the factory itself. Mr. Moss said the women were engaged in completing a special order prior to the factory being closed for a week on account of the village wakes. Defendants were fined 10s. for each girl—£1 altogether.

At the Petty Sessions, on Wednesday, Messrs. E. R. Adcock and Co., hosiery manufacturers, Meadow-lane, Loughborough, were summoned for employing a woman after 7 p.m. on the 24th ult. Inspector Armstrong prosecuted. Mr. W. Moss, on behalf of the defendants, pleaded guilty.—Mr. Armstrong stated that on visiting the works on the day in question he found a few men working in the factory, and in a house at the back, in the same yard, he found a woman at work doing the running on. They must have women to do this running on, or else the men could not continue their work in the factory. Therefore it was an evasion of the law to remove the woman from the factory into a house which was really on the premises, and there work. He (the inspector) ascertained that the woman worked in the factory on the morning of the 24th ult. from eight to six o'clock, and then went into the house, where she was at work when he went at ten minutes past seven o'clock. On the day previous she had gone into the factory at eight o'clock and worked there till six o'clock, after which she went into the house and continued to work till 9 p.m.—Mr. Moss said his clients throughout the conduct of their business had been under the impression—and he believed it was a very general one—that providing a female or young person was not employed in the unwholesome atmosphere of the factory itself, but was employed in her own home or the dwelling-house of some other person, there was no offence under the Act. Finding that the overlooker had access to the house to fetch the work away he (Mr. Moss) advised his clients that a technical offence had been committed, and they at once asked him to plead guilty, ordered the girl to discontinue this overtime work, and through him gave the Bench every assurance that the thing should not be repeated under any form whatever. While not wishing to disagree with the inspector, who very moderately opened the case, he would point out that the house was scarcely in the same yard. The Bench imposed a fine of £1, including costs.

Manchester.

A fire occurred on Wednesday morning at the manufactory of Messrs. Vernon, Mills and Co., trimming manufacturers, Vernon-street, Longsight. It is a building of considerable size, several storeys in height, and most of it was destroyed.

A meeting of the presidents of the respective masters' associations connected with the Employers' Federation took place on Tuesday in Manchester, with a view to considering the state of trade, coupled with the wages question. A meeting of the Executive of the Federation was also held yesterday.

In connection with the City and Guilds Examinations, Mr. W. H. Cook (junior manager with Messrs. Brooks and Doxey, machinists, West Gate) has passed first class in honours in the subject of cotton spinning, and been awarded the bronze medal and the Clothworkers' Society prize of £5.

An inquest was held on Monday on the body of Mr. Julius Heynssen, a shipping merchant, aged 57, who lived at Victoria Park, Rusholme. Deceased, who had suffered very much from a nervous disorder, left his residence on Sunday evening, and when in Old Hall-lane was taken ill, and died almost immediately.—A verdict of sudden death from natural causes was returned.

Nelson.

The following are results of the examination of students in Cotton Weaving attending Homeshaye School, Mr. James Holmes being the teacher:—First class, ordinary grade: W. H. Dixon, J. W. Chatterton, R. Slater, J. Hacking, S. Sutcliffe, J. T. Richardson, D. Ormerod, W. Myers. Second class, ordinary grade: W. T. Pomeroy, J. Proctor, W. Slater, J. W. Naylor, J. Parker, W. S. Varley, W. F. Cooker, H. Bamister, F. Bamsall.

Nottingham.

The Master and Wardens of the Drapers' Company of the City of London have contributed the sum of £1,000 towards the equipment of the new technical schools in connection with Nottingham University College, and the Town Clerk has received a cheque for the amount. The company had previously given £1,000 towards the cost of the building. The schools will be opened in October, and the Duke of Devonshire, as President of the Technical Society of Great Britain, will be asked to take part in the opening ceremony.

Oldham.

The No. 2 mill of the Parkside Spinning Co., Royton, is approaching completion, and is expected to be ready for the reception of machinery in about a month.

Messrs. Platt Bros. and Co. have secured the order for the whole of the cotton spinning machinery required by the Wernick Spinning Co. for their new mill extension at Work Moor. The mill will hold about 40,000 spindles.

On Tuesday night defects were found in the fly wheel, pinion, etc., of the engines at the Gordon Spinning Co., which have necessitated the mill being closed since. It is expected that work will be resumed on Monday morning.

The directors of several of the Oldham spinning companies are so well placed in regard to loan money, that they have effected a reduction of the rate of interest, while in one instance loans have been paid off, owing to an abundance of this sort of capital.

The work of rebuilding the Higher Clough Mill, Shaw, which was destroyed by fire a short time ago, is nearly completed, while the Shawside Mill, which a while since met with a similar fate, has been made good, and is almost ready for the reception of machinery.

It is reported that Morton Mill, Royton, formerly worked by the late Mr. Edwin Merson, is about to be floated, a limited company being formed for that purpose. The mill contained 30,000 spindles, 25's, 26's, and 27's, while there were 314 looms making cloths, velveteens, and corbs.

The new mill of the Royal Spinning Co. is approaching completion, and will be ready for machinery in about three months. It will contain about 75,000 spindles. The company, it may be stated, took over the premises worked by Messrs. W. T. Cooker and Son, Royal Mills, Rochdale-road, and have erected the new structure, which will make the spindle power of the concern about 100,000.

The trip season is now in full swing in Oldham, and scarcely a Saturday passes by without one mill or another, either the burbs or the directors, having an outing. The former obtain grants from what is legally known as the "kettle fund," or the money obtained by payment for hot water. In this way they lessen the expenses, and reduce the price of the tickets to almost a nominal amount. With the loads of directors it is a little different, yet they have a fund which is made up of "hogstings" from new directors and officials.

On Friday of last week, Mr. Ralph Heatham, engineer at the Mumps Mills belonging to Messrs. Clegg, Limited, sustained injuries from a fall, whilst cleaning the engine during the dinner hour, which resulted in his death the following day. Deceased, who was 64 years of age, and had been in the employ of Messrs. Clegg for nearly ten years, was a director of the Moorfield Spinning Co., Shaw, with which he had been officially connected since its formation in 1875. He was also a holder of considerable shares in other limited liability spinning companies.

The following are the returns of the examinations of the students attending the cotton spinning classes held under the auspices of the Educational Department of the Oldham Industrial Co-operative Society:—*Central Class*—ordinary grade—20; Asher Elliott, John Wolfenden, and Samuel Schofield; 2nd, Thomas H. Houghton, John Barnes, and Albert Wild; John Broome, 2nd honours grade. *Hollinwood Class*—ordinary grade—10; John S. Jones; 2nd, Travis Chadwick, Orlando Booth, John Wharmby, Samuel Ashworth, John Taylor, 2nd Horatio Mills; Fred Halliwell, 2nd honours grade.

At the quarterly meeting of shareholders of the West End Mills Co., Oldham, on Thursday evening, the chairman of the board of directors (Mr. Samuel Buckley, of Didsbury) declared that in the manufacturing and spinning departments they were now experiencing about the worst position since 1859. He condemned the further extension of the cotton trade in the erection of spinning mills by canons, and said

what was really wanted to improve trade was a large take-off for yarn and goods, but the making of markets for taking increased production must be slow under any process, or it would not last.

Ossett.

The following are among the results of the late technical examinations held by the City and Guilds of London Institute at this school:—*Wool Dyeing*: Robert Lacey, second class, Ordinary grade. *Wool and Worsted Spinning*: Arthur Kirk, James E. Hemmingsway, and Fred Pickles, second class, Ordinary grade. *Cloth Weaving (Division 1)*: Walter Hemmingsway, Robert Senior, Fred Pickles, James W. Dewis, Linn Sykes, second class, Ordinary grade. George Fothergill, first class, ordinary grade, the Clothworkers' Company's Prize of £2, and Institute's bronze medal Cyrus Hemmingsway, first class, Ordinary grade. Edmund Senior, and Eli M. Wilson, second class Ordinary Grade. *Cotton Dyeing*: Arthur Wilby, second class, Ordinary grade.

A meeting of the Chamber of Commerce was held on Wednesday, the president (Mr. W. Patterson) in the chair. The President gave a report of the recent Congress of Chambers of the Empire. He and the other representatives who attended were thanked for their services.—The President referred to the new order prohibiting the importation of rags from France, which was a matter concerning Ossett and the district. While he agreed that it was desirable to prevent the introduction of cholera, he complained that such an order should be issued by the authorities in London without any notice. Consigners and importers suffered serious loss, as the absence of notice prevented them from stopping the shipment of rags at the French ports, and when the rags arrived at English ports they were not allowed to be landed, but had to be sent back again, costing double freight. Two or three days' notice would have prevented the shipment of a large quantity of rags, and as those which were not allowed to be landed had probably been collected and packed for weeks or months, he thought they were not likely to contain the infection. He thought a little more information would have enabled the authorities to have avoided inflicting a hardship. He moved that the attention of the Board of Trade be drawn to the desirability of either giving three days' notice in such cases or of compensating for loss inflicted.—Alderman G. H. Wilson seconded the motion, and it was carried.

Padiham.

The results of the examination of the cotton class in connection with the Technical School are:—H. Slater, Robert Haggreaves, and James Shaw. Second ordinary: James A. Bunsell, Charles Parkinson, and William T. Simpson.

Preston.

For a second time the highest award given throughout the United Kingdom in the examination in Weaving and Designing, held by the City and Guilds Institute, has been gained by a Prestonian. Mr. James Nelson, designer, of Messrs. Wilding Brothers, Alexandra Mill, is the fortunate winner of the silver medal and first prize given by the Clothworkers' Co., London, for first position in the Honours grade. Mr. James Heaton has obtained the second prize and medal for Cotton Spinning. The following are the various passes:—*Cotton Weaving*: Honours, 1st prize and medal, James Nelson; 1st Honours, H. H. Pilkington, W. H. Kayser, W. J. Kenyon, T. Mitchell, C. Taylor; 2nd Honours, J. E. Adamson, J. J. Barstow, C. R. Gastang, J. J. Slater; 1st Ordinary, W. Bousfield, E. Ginkell, A. Green, T. Taylor, J. W. Welch, A. Whittam, D. Eason, J. W. Carrachaad, A. Ogden, E. Crook, C. K. Buckley, E. Taylor, G. Whittle; 2nd Ordinary, J. Gilbert, G. E. Green, J. T. Simpson, W. H. Ainsworth, T. Nelson, W. Poston, J. Fiddling, W. Edwards, W. Woods, H. Cross, M. Sattou, R. Blakeley, E. Hindle, E. G. Wilding, A. Bosson, E. Birkham, T. W. Biley, R. C. Sandham, C. Marland, R. Paulton, W. Gilbert, W. Gregory, A. R. Booth. *Cotton Spinning*: 2nd prize and medal, James Heaton; 1st Ordinary, James Heaton, James Booth, G. Highfield, A. Collis; 1st Honours, John H. Conzdale; 2nd Honours, J. H. Almond, R. Barber, T. Barton, W. Pearson, R. Billington; 2nd Ordinary, T. Newsham, J. Woods, R. Tomlinson, J. S. Kilver, J. R. Riley, J. J. Sargent, E. Thickerson, J. Robinson, W. Airey, R. C. Sandham, J. J. Birnes, T. E. Crossbwaite, C. Ratcliffe, W. Firth, G. Smith, G. Wignall. The above are students of the Harr's Institute.

Radcliffe.

Under the auspices of the Radcliffe and District Trades Council, a massive demonstration was held on Saturday of the combined trades in the district. Between 5,000 and 6,000 took part in the procession, according to the official returns. Several of the trades exhibited specimens of their handiwork and machinery. After parading the streets, a mass meeting was held on the Peel Park ground, Mr. J. Bingley, president of the local Trades Councils, presiding. Among other resolutions was one asserting that the continued neglect of

labour questions by the House of Commons was deserving of the strongest condemnation, and calling upon the new House to "satisfy the just demands of the toiling community," and congratulating the Labour members on their return. Mr. S. Woods, M.P., speaking to this resolution, maintained that there ought to be 100 Labour members in the House, and asserted that he would have no hesitation in assuming the rôle of a Parnell in clogging the wheel of the legislative machine unless attention were given to the Eight Hours' question. He believed that unless they turned their attention to those great social and industrial questions it would not be possible for any government to live. Needless to say the resolutions were carried.

Rochdale.

The following are the results of the examinations at the Rochdale Technical School:—*Cotton Weaving*: Honours stage, class 1: George H. Enossett, Abraham Catterton, John H. Goodbridge, and James H. Leach; class 2: James Jackson and James Mills. Ordinary stage, class 1: Henry Butterworth, Horsfall Silverwood, Edwin Watson, Abraham Butterworth, John W. Howarth, and Thomas Shepherd; class 2: A. A. Cockerott, James Howarth, Joseph Holt, John Clough, James S. Stott, E. Heyworth, Wm. R. Ashworth, T. Ashworth, James Holt, Wm. Fiddlen, T. Bamford, and Wm. Heykist. *Cloth Weaving*: Honours, class 1: Nathan Pickup. Ordinary, class 1: Jos. Hanson and Homer Mills; class 2: Walter Hoop, James E. Lee, and James Leach. *Cotton Spinning*: Honours, class 1: James Pilling; Ordinary: Robert T. Hoyle, Benjamin Beerley, Leonard Sutcliffe, James E. Smith, Joseph Waller, Arthur Marcroft, and George W. Flower. *Cotton Dyeing*: Peter Maguire, 2nd class ordinary.

Ramsbottom.

The Stubbins Spinning and Manufacturing Co., Ltd., report a loss of £600 on the half-year's working. There are 31,480 spindles and 746 looms.

Shipley.

The following results have been received in connection with the examination of technical students:—*Cloth Weaving, Division 2*—Honours Stage—First Class: William E. Taylor, Thomas Hollis, and A. M. Chapman. Ordinary Stage—Second Class: Henry Stephenson, A. Barber, William Dobb, Elzer Midgley, John Cooper, Herbert Spencer, and William Rushton.

Stockport.

The following are the results of the recent examination in cotton spinning of Stockport Technical School students (teacher, Mr. J. Woolley):—Honours grade: John T. Hadfield, first. Ordinary grade: John W. Hoops, first; William H. Barber, first; Alfred Smith, first; Fergus Sharpley, first; Thomas Dabury, second; Edward Edge, second; John W. Lambert, second; Frank Edridge, second; James Wright, second.

SCOTLAND.

Arbroath.

Last week a fire broke out in the spinning mills of Messrs. Scott Bros. Some of the machinery and a quantity of material were destroyed.

Ayrth.

Messrs. Hingworth and Co., of the Wool Mill, have lately been fitting up new machinery. The firm have been extending their premises for some time back, and adopting all the latest improvements in the manufacturing of tweeds and blankets. The industry gives employment already to a considerable number of men.

Dundee.

At a meeting of mill and factory workers held in Albert-square, resolutions were agreed to in favour of an increase in their wages.

The German schooner *Faite*, of Bremerhaven, left Dundee last week for Buenos-Ayres with a cargo of machinery and other goods for Rio Grande do Sul. The cargo consists of engine fittings manufactured by a Yorkshire firm, jute spinning and weaving machinery made by Messrs. Urquhart and Lindsay, and a selection of jute yarns.

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

	U.S. and Canada.	W. Indies & S. America.	Antwerp.	India and Egypt.	Consular.	Other.	Total for year to date.
Cotton.	2,447	—	87	—	—	—	2,534
Linen.	2,447	—	87	—	—	—	2,534
Total.	4,894	—	174	—	—	—	5,068

The following are the total values of the exports for the same twenty-nine weeks of last year:—Cotton, £2,220,643; linen, £461,006.

Montrose.

At a meeting of Montrose Town Council a letter was read from Mr. James Gibb stating that circumstances had prevented him from going on with the erection of a proposed new spinning mill in the town, and might, unless matters improved very much, compel him to abandon it altogether.

IRELAND.**Lisburn.**

Owing to the introduction of a new system of flax-dressing machinery in the local mills, which has already had the effect of doing away with hand labour to a large extent, over 200 operatives have been thrown out of employment.

Miscellaneous.**YARN COUNTS.**

By MATTHEW BLAIR, Glasgow.

The Silk Association recently issued circulars to manufacturers and Chambers of Commerce, asking their views on the proposal to establish a "Decimal Count." These proposals were as follows:—

(a) That the Association recommends the adoption wherever practicable, of the "Decimal System of Counts of Yarn," based on the number of thousands of yards to the pound weight. Thus No. 10 would measure 10,000 yards to the pound weight.

(b) That the "Decimal Count" should always mean the length of the completed thread, whatever may be the number of folds.

(c) That in writing the count the number of folds will always be put after the counts. Thus 5/3 will mean 5,000 yards to the pound weight of completed thread of three folds.

The replies received, while in the main favourable, showed plainly that the subject of counts generally, and the advantage of the "Decimal counts" specially, were very imperfectly understood. Some of the objections were very curious, and even in a way unanswerable. One gentleman strongly insisted that "since a hank of silk as you may, you never could bring it nearer than five deniers."

To answer remarks of this type is about as difficult as to show the connection between Tenterden Steeple and the Goodwin Sands. Others puzzled over the variations between scoured and unscoured yarns, and loaded and unloaded silks, a matter which count can never remedy. Others thought we should at once adopt the French Metric system, apparently without knowing that this would be no improvement unless we also adopted metres and kilos, in all our calculations. Others thought the "Decimal" was only one more count added to the present muddle, and naturally enough disapproved of it.

Until the public mind is educated to the evils of the present complicated and irrational systems, and the vast facility to manufacturers of using a "Decimal" system, it is not likely that the proposals of the Silk Association, however excellent, will be extensively accepted and practised.

It is with a view to clear up some of these misunderstandings, and to help to mature opinion upon the acceptance of a better system, that the present paper is intended.

WHAT THEN IS COUNT?

What are its uses, and what idea does a spinner or manufacturer intend to express by count?

Count is the relationship of length to weight. In all cases it means a certain length of thread in a certain weight. It does not show the actual thickness of a thread. This is the province of "Gauge." Rigid substances like wire, are distinguished by gauge, which is the size of a hole through which the wire will run. But elastic materials like wool and cotton are not adapted to be distinguished from each other by means of "gauge." For these count is necessary.

Count being made up from the two factors of length and weight, it follows that if we change one factor we change the count, although we may not change the yarn. If for instance, a woollen yarn is the ordinary oily state measures 1,000 yards to the pound weight, but when scoured the same length weighs only twelve ounces, it is evident we have altered one of the factors of count. The substance remains the same, but the count is different. It requires now 1,333 yards to weigh one pound.

On the other hand if we dye it 20 ounce dye, we likewise change one of the factors, and therefore the count. In place of 1,000 yards to one pound it will now take only 800 yards to weigh that amount.

THE USE OF COUNT TO THE MANUFACTURER

is to let him see the length of thread he will get

for his money. He requires this to enable him to calculate his warp and his web quantities, but he also requires to know the weight of cloth that will be produced. He may buy yarns by length or by weight, but in either case he will require to know the length as well as the weight. Hence "count" is the relationship of length to weight.

THE METHODS OF EXPRESSING COUNT

have all been created by the spinners. They have studied their own convenience and have given far too little consideration to the wants of the manufacturer. Hence there has risen up a confused mass of systems of reckoning counts, and as a proof that they have been in general created by the workmen for their own use, it is to be observed that none of them are "Decimal" and not one of them can be conveniently used, except for yarn of a thickness somewhat near to the particular kind which the spinner who invented the count was usually spinning.

THE CONFUSIONS AND ANOMALIES OF THESE SYSTEMS

are very extraordinary. The Yorkshire woollen spinner uses the "skein" system. He has a small reel by his spinning frame, on which he winds a small quantity from time to time as the spinning goes on, and finds how many yards weigh one dram. Thus "16-skein" yarn means that 16 yards will weigh one dram. This is very easy for him, and is a type of the way all our counts have been created. No consideration was given to simplify the manufacturers' calculations as against other yarns. The throwster or spinner simply reeled a bit, large or small just as suited himself, and from that made his count. Hence we have skeins of all imaginable lengths, and reels of all circumferences. The worsted spinner makes a skein of 560 rounds on a 2½ inch reel, and bases his count on that. The cotton spinner uses the same number of rounds, but on a reel of 54 inches—the linen spinner makes 120 rounds on a reel of 90 inches—the Macleodfield throwster makes a skein of 500 yards if it is Tusser silk, but if it is China silk he makes skeins of 1,000, 1,500, or 2,000 yards, and counts are made up based on each one of these systems. The Italian throwster reels in all sorts of ways up to 10,000 yards in a skein, but makes up his count on none of them. He makes test skeins of 400 French ells, now an obsolete measure, and weighs it by deniers, also a weight no longer in use—and yet all Europe deals in thrown silk in this antiquated system, a system which has no regard whatever for the convenience of a manufacturer.

In Leek the skeins used are of all imaginable lengths. 260, 266, 273, 288, 300, and 500 yards are common, and they are weighed by drams.

In some districts in Scotland the skein is 240, and in others 300 yards, and it is weighed by the "stone;" but the stone is of no uniform weight. It evidently arose from a stone set aside by unanimous consent of the villagers to be their standard of weight, hence we have stones of 12, 14, 24, and 28 pounds in use in various districts of the country.

Not are things any better on the continent. Although 1,000 metres to the kilo, is the rule in many parts of France, Roubaix counts by 700 metres, Amiens by 710 metres, and Rheims by 1,000 metres for carded yarns, but always one-third less for combed yarns. Sewing silks are counted by the grammes in skeins of 234 metres, while in the tram and organdie trades the "metric" system has never been adopted at all.

In America the skeins range from 50 to 1,600 yards, and are calculated by the pound.

The systems, in fact, are endless—they were all created for the spinners' convenience, with no regard whatever for the manufacturer. Not one of them is based on any uniform or sound principle applicable to all thicknesses of thread. They are all bad, root and branch. The calculations of manufacturers are in no way aided by these complicated counts. Where goods are made of one material only the case is not so very bad, although needlessly intricate, but where several different classes of yarns are used in the same cloth, the labour to the manufacturer is greatly increased. In some tapestry fabrics as many as seven different classes of yarns are used, all calculated on different scales—thus:

Cotton	840 yard scale.
Wool	560 " "
Span silk	840 yards, but different from cotton.
Organdie	denier scale.
Tram	drum scale.
Tusser silk	500 yards scale.
Linen	Belfast scale.

To calculate the lengths, weights, and value of the quantities of the foregoing in a piece of cloth, is a serious task, open to many errors, and adds seriously to the cost of production. It might all be simplified by a rational and uniform system of counts.

SHOULD WE ADOPT THE FRENCH "METRIC" SYSTEM?

This has often been advocated, but we think without

due reflection. It would be of no benefit to our manufacturers—only indeed a cause of further confusion—unless we at the same time adopted metres and kilos in all our calculations. What we want is not a new unit of calculation, but to use decimally the units that we have. Besides, the "metric system" is not a satisfactory method for folded yarns. 200/2 metric means that the single thread runs 200,000 metres to the kilo, and is doubled to a length of 100,000 metres. This is clear enough when all the strands are of the same yarn, but the metric system, seeing it always counts by the single thread, has no way of expressing the count of a yarn twisted from two or more yarns of different thickness, or where one thread is wrapped round the other as eccentric, loop or knot yarns. A system which is not applicable to all sorts of yarns, without making awkward exceptions, should not be adopted.

WHAT ARE THE PRINCIPLES OF A TRUE SYSTEM OF COUNTS?

1. It must be Decimal. It is high time all our weights and measures were made decimal. We are almost alone in Europe in clinging to the present antiquated and confusing systems. And now that by our School Boards the decimal system is being taught to the rising generation, and nearly all scientific calculations are already conducted in it, we must get the counts of yarn into line with the improvements of the age. Our manufacturers would find it a vast facility in all their calculations.

2. The system must show on the face of it the facts which the manufacturer requires to know—these are the length in a given weight. None of the present systems do this. It certainly can be arrived at by a series of calculations, but the "Decimal Count" should show it at a glance.

3. It must be equally convenient for the spinner. The decimal count of yards to the pound is just as convenient for the spinner as the rule-of-thumb methods that many of them now employ, and it is intelligible to every person, which cannot be said of the present systems.

4. It must be adapted to all classes of yarns of whatever thickness. None of the present systems are capable of being used in this way. It would, for instance, be inconvenient to express a coarse carpet yarn in the Italian scale of deniers, or a fine raw silk in the Manchester scale of drams or even quarter drams. But the "decimal" system can express most clearly the most minute differences in the count of yarns. Thus "10" would contain 10,000 yards to the pound. If another yarn was only one ten thousand part coarser, it would be written No. 9.⁹⁹⁹. If again a yarn was so coarse as to have only one yard in a pound it would be written No. 0.⁹⁹⁹.

5. It must be adapted to any number of folds, and to yarns of different thicknesses twisted together, and to eccentric, loop, and knot twists—there the French metric system fails. The "Decimal" should always indicate the count of the completed thread.

6. It must be written in a way that leaves no risk of mistake—there again all the present systems are at fault. There is no rule or custom of trade at present to decide whether 1/5 means three five fold, or five three fold. Cotton spinners might take the one view and silk spinners the other, and if the yarn were of a thread of cotton and a thread of silk twisted together, no one could tell which system it should follow. In the "Decimal count," the number of folds should always be placed after the count, and this established as a principle.

The "Decimal count" as expressed in the three propositions of the Silk Association given at the beginning of this paper, is the only system that fully complies with these conditions.

HOW ARE WE TO INTRODUCE AND USE A DECIMAL COUNT?

We do not propose that spinners should abandon the counts to which they have been long accustomed. Let them go on in their own way as long as they find it suits their convenience. All we ask is that they should remember the convenience of other people, and this they can do by marking on their bundles, besides their own count, the equivalent decimal count. The merchants and manufacturers would soon find the benefit of it, and would prefer yarns marked in this way. Supposing, for instance, a manufacturer had to make a warp of 100 yards long, and 1,000 ends of a 44 denier organdie. The mark 44 deniers does not show him the length in a pound, which is what he wants to know. But if the bundle were marked "equivalent to 100 Decimal," he would see at a glance that one pound of 44 denier silk contained 100,000 yards, the quantity for his warp. And so on in all the calculations of warp and web. However many different sorts of yarn the manufacturer used, if he had the decimal count of each he could make up his calculations with an ease and an accuracy which would be quite refreshing compared with the present complicated and unsatisfactory systems.

We commend these proposals to the consideration of the spinners and manufacturers, and feel sure that when properly understood, they will win their way in the public favour.

STEAMING IN WEAVING SHEDS.

MR. INSPECTOR OSBORN'S REPORT.

Mr. Whympster, Chief Inspector of Factories, has presented his first annual report to the Home Secretary. He restricts himself on this occasion to the reproduction of the reports of the sub-inspectors. In presenting the following report by Mr. Osborn, the Chief Inspector says it is of much value, dealing as it does with details not always clearly understood even by overseers and operatives themselves. Indeed, to thoroughly understand them is no easy task without a scientific training. The report reads:—

The Cotton Cloth Act, which has now been in operation twenty months, aims at reducing in cotton weaving sheds the evils found to result from the excessively damp atmospheres produced by the injection of live steam in the shape of steam-jets, or by flooding the floor with water, and at the same time closing all or nearly all ventilation, in order to prevent the loss of any moisture obtained thus, or by condensation, on roof or walls, or from the breath, etc., of the workpeople—practices which led to great discomfort, exhaustion, and lassitude on the part of those employed, increased by having to breathe the same inhaled atmosphere over and over again, and by the simultaneous consumption of oxygen by the gas-jets in the winter time.

This use of artificial moisture originated in America, and was designed to overcome the excessive dryness of the atmosphere. The steam was infused near the floor, which was also (and is still) watered two or three times a day.

The fashion was introduced in this country some 49 years ago. As a result of the scarcity of American cotton during the war, there arose a demand for Surat cotton, its very short staple rendering the yarn spun from it rougher and more liable to break. Thus the use of special forms of size became essential to secure better weaving, and also to prevent the liability of the warp threads to "stare" and break with the friction of the heads and reeds. At the same time manufacturers under the pressure of the merchants had to solve the problem how to produce cheap cloth with the maximum weight and the minimum of cotton. This originated a class of goods, the demand for which by no means ceased when cotton again became plentiful. In these circumstances "sizing" (some form of which has always been in vogue, so far as we know—the natives of India use rice water) became a fine art; its aim being to fix in the warp threads the largest weight of china clay, etc., that could be carried through the weaving process. Owing to the clumsy methods in which these prescriptions were compounded, moisture became very important, and in addition to the tallow and starchy matters used to give cohesion, the sensitive salts (chloride and sulphate of calcium and magnesium) were employed from their well-known affinity to moisture. In this way 250 per cent. of weight can be added to tooth. of cotton warp on occasion. It will be readily understood this compound rendered the sized threads sensitive to any extremes or variations of atmosphere, hence the growth of conditions in the weaving sheds prejudicial to health, and at last finding expression, which could not be overlooked, and which formed the subject of special enquiry in 1883.

The Act of 1889 deals with these matters, and provides in Schedule A a table of temperature and the maximum degree of humidity permitted at each degree. This table is based on what is necessary for a fairly "wearable" atmosphere for any class of cloth, and to this estimate is added a "playing" margin that an employer may not be unduly harassed for small offences, hence no one can reasonably complain of being dealt with if he exceeds the scale. And in this relation it may be stated that the majority of capable managers aver that they get their best weaving at about 1½, 2, or 2½ degrees below the humidity they may legally attain.

It is interesting to notice that an excess of moisture is prejudicial to the interests of the employer. It may bring about mildew in the cloth when warehoused; and also if largely sized (for merely weaving purposes) it may cause the warp to be too elastic and the cloth narrower than contract. Or if heavily sized it may be seized and absorbed by the deliquescent salts, making the threads pasty, and clogging the heads and reeds, thus seriously interfering with the weaving. Some idea may be formed from these facts that with the hundreds of varieties of cotton cloth woven here, and the possibility that an employer may at one time be weaving several sorts in the same shed under different conditions of warp, considerable care is needed to have a suitable atmosphere, some sorts needing more and some less moisture to weave smoothly and overcome the electrical conditions undoubtedly generated by the multiple friction of manufacturing.

In administration I have found that schedule A may be imposed and made more intelligible to employers and others if a fourth column is added, giving the percentage of moisture represented by the humidity allowed, which is at present given

only in the form of grain weight in the cubic foot of air, and requires an elaborate calculation to reduce to percentage, which is the really important point to all concerned. As the schedule stands an ignorant employer may imagine he betters his conditions by increasing his temperature, and the workpeople certainly have the impression that this is his aim, being also misled by the "grain" table; whereas at the lowest temperature he can have 85 per cent. of moisture, while at 95 degrees of dry bulb he can only have 66 per cent. of humidity, a very important reduction. It is due to employers also to state that in the summer when the thermometer outside is 100 degrees and higher, the construction of a weaving shed roof (half slate and half glass) renders it a physical impossibility that the inside temperature can be brought below 80 degrees. Some of the operatives seem to think this is possible, and wish that it should be illegal under these circumstances to increase temperature "by artificial means," by which they mean to introduce steam in pipes, the heat of which will add to the temperature of the shed. From what has already been said it may be inferred no employer would really desire to increase his temperature under such circumstances, though in some cases no doubt a certain amount of heat radiates from even the small inch steam pipes, notwithstanding they are often covered with so called non-conducting material. Invention is, I know, busy trying to devise some method to supersede the flowing in of steam during the summer months by vaporising water in its steel; but at present all contrivances appear expensive, and generally in some point defective, or uncertain, while similar objections apply in more or less degree to the apparatus for introducing moistened air or steam in another shape. These are found to be difficult to control and uncertain in distribution, and clearly do not fulfil all conditions *per se*, as the sheds where they exist without any extractive system are stuffy and oppressive.

This brings me to the point in which the Act has already proved most beneficial, and is practically bringing about a satisfactory revolution in the sanitary conditions of the sheds within its purview. The problem has been to find a system which could be adopted cheaply and effectively to the advantage of the workers by ensuring adequate change of atmosphere, and equally to the benefit of the employer by diffusing more evenly the conditioned atmosphere. As the cubic contents of these sheds range from 120,000 to 1,200,000 cubic feet of air, it was quite clear no merely natural system was adequate, but that mechanical means were a necessity. There were two important points to be kept in view, viz., the plan must be one which could be operative all the year round without being stopped (hitherto all ventilation had been stopped entirely from October to May, owing to its primitive absurdities); and also one which would eliminate a reasonable amount of that dust, largely consisting of fine but insoluble particles of cotton fibre, which is one of the most unwholesome features of all cotton weaving where there is inadequate ventilation, and which also contains fermentation cells, and other floating germs, which any method of impulsion would not remove, but merely keep in motion and suspension. The solution has been found in the use of small extracting propellers, symmetrically arranged according to the area to be dealt with, and run at moderate speeds, but removing once in the hour a cubic quantity of air almost, in some cases quite, equal to the whole body of air in the sheds, without any draught perceptible, and with no inconvenience to work or workers. It assists also to distribute the conditioned atmosphere evenly, lessening the amount of moisture to be introduced by getting rid of the hot foul air in the upper portion of the factory, whether caused by solar heat in summer or gas in the winter, both of which causes previously tended to increase temperature and dry the air prejudicially.

It is with great pleasure I testify to the good will of the employers in readily carrying out my suggestions, though in many cases with some natural apprehension as to the results; and also to the frankness, so characteristic of Lancashire men, with which they have acknowledged the satisfactory results obtained. It is found that during this last summer, where the new arrangements were completed, the workpeople have not felt the same lassitude or exhaustion, and have suffered less from excessive heat and perspiration, clearly thereby being less liable to reactions of the system, while work has been better and production more satisfactory. All the leading firms have now completed or are completing their arrangements in this respect, and I hope to send you before long a detailed list of what has been done. The examination and analysis of the daily records, approximately some 1,200 per month, has involved a considerable amount of labour, but my opinion, from personal observations, as well as scrutiny of these returns, remains the same, that these entries are in the main honestly recorded. No doubt in some cases there may be exceptions; and some have come under my own notice. I am inclined to think that in the case of false entries it should be possible to deal at once with an offender, instead of

notifying as in other infringements of the Act; but in all probability, with increased supervision, and auxiliary vigilance on the part of the operatives themselves, whose assistance may fairly be expected towards ensuring the success of an Act so peculiarly their own, this class of irregularity will disappear or be reduced to infinitesimal dimensions. Better observance of the Act arising in great measure from better knowledge of its importance and essentials may be gathered from the fact that all classes of irregularity, including the most trifling, requiring notice of contravention of the regulations, have dropped from over 150 for April, 1890, to 45, all told, for September, 1891; and the number of prosecutions also indicates that many firms have profited by their early cautions to keep clear of cause for proceedings for the statutory twelve months.

MR. HENDERSON ON THE COTTON TRADE.

Several interesting reports upon the state of trade in the North of England in 1891 have been prepared by Mr. Henderson, her Majesty's Superintending Inspector of Factories and Workshops, and are published in the annual report of the Chief Inspector, which was issued on Wednesday. "The past year," says Mr. Henderson, "has been one of the most trying years ever experienced in the cotton manufacturing districts. It is estimated that more money has been lost in Lancashire during the last 12 months than in any single year since the cotton industry was established. The quarter which ended on the 30th September last has been a particularly disastrous one to many cotton spinning firms in Lancashire." The report continues:

"In Oldham alone it is estimated that the losses on the quarter's working will not be less than £200,000. This may prove a serious matter, for it is well known that the majority of the spinning mills in that district are limited liability companies, which in an ordinary way have but a small reserve of capital to fall back upon. The explanation of these heavy losses at this time is to be found in the fluctuations which have taken place in the value of the raw material. In my report last year I referred to the fact that the American cotton crop of 1890 was much inferior in quality to that which preceded it. It was at the same time exceptionally abundant; it was a bumper crop, and such was the exceptional character of the season that it continued to grow and to yield something to the picker well on to the end of the year. The result was a serious drop in prices, and spinners who had been accustomed for several years in succession to do well by buying cotton early in the season have this year been caught, and have had to face a falling market for the raw material at Liverpool, and a stagnant market for the manufactured article at Manchester. The serious losses to which I have referred have been the natural consequence."

"The condition of affairs in Lancashire at the present time is regarded by some who have had long experience of the trade as very critical. For a long period there has been a growing tendency on the part of private capitalists to withdraw from the business. I referred to this last year in some remarks I made with respect to the Blackburn district, and they are applicable to a much wider area. It is distressing to witness the havoc which has been made in some of the picturesque valleys of Lancashire by the pressure of modern emulation and competition. Factories and cottages closed and unattended, many of them unroofed and in ruins, meet the visitor at almost every turn, and give some indication of the great sacrifice of capital which must have been made before the present hopeless condition of things has been reached. The cotton spinner and manufacturer who owns his mills and machinery himself promises soon to become extinct, and we shall then be reduced to the position which obtains in the manufacturing districts of America. The only employers of labour will be the limited companies or corporations. That this revolution is likely to prove beneficial to the operatives I think is open to question, and they would do well to weigh the point carefully. The cotton industry has been prosecuted in this country during the last 50 years with great success, it has expanded during that time more rapidly than the most sanguine ever anticipated. The tendency at the same time has been to send the smaller capitalists to the wall, and to crush out the individual employer, who finds it more and more difficult to compete with large companies owning enormous factories equipped with the most modern machinery and appliances. Another influence which has operated much in the same direction is the increasing demands upon manufacturers by the Legislature, and the growing difficulties of dealing with the workpeople and their representatives. There can be no question about the fact that of late many employers have withdrawn from the cotton industry at a serious sacrifice rather than face the increasing worries and annoyances which they find themselves compelled to face. Upon the paid official of a public company these fall lightly comparatively speaking, and the companies or

'no-ops,' as they are locally termed, promise to have the trade very much to themselves by-and-by. At the present time, of the many new cotton factories being built or projected in my district, I cannot recall one of any importance which is owned by a private employer. An interesting fact has recently come to my knowledge which bears upon what I said in my last report to you about the competition between Lancashire and Scotland in the cotton manufacture. Between the time the remarks I made were written and your report was published the Glasgow Trades Council was approached by a deputation from the weavers of one of the cotton weaving factories in Glasgow, and it was represented that they were being most unreasonably dealt with, being paid low wages and also called upon to work three power-looms each instead of two. The assistance of the Trades Council was claimed as a strike was contemplated. Before taking action the Council determined on making some enquiry, and a representative was sent to Lancashire, who discovered that these numbers of weavers, both men and women, worked four looms at the same class of work without difficulty; nay, more, it also came out as a result of this enquiry that the Scotch manufacturer actually paid more for his weaving than his Lancashire competitor, and yet his weavers could not make half the wages of those in that county. We need go no further than this for an explanation of the reason why the Scotch manufacturer fails to resist Lancashire competition. He pays a high rate for weaving his cloth and his machinery produces less, because his workpeople will not alter their accustomed habit of working only two looms."

Potter's back-skin factory at Crimminschan has been burnt down.

On July 15th a conflagration destroyed the spinning mill of Leopold Leow Beer, in Brinn. The damage is estimated at 400,000 florins.

The extension of the Fort Gloster Jute Manufacturing Co.'s mills, Calcutta, is being proceeded with.

The premises of the First Hungarian Hemp-Spinning Company at Segedin, in which 500 persons were employed, have been completely destroyed by fire.

The Japanese silk crop is disappointing to producers; it is likely to be 10 per cent. less than last year and of an inferior quality, judging from the samples that have been received.

CERTIFICATES OF ORIGIN FOR BULGARIA.—A Foreign Office circular has been issued stating that owing to the difficulties experienced at the Bulgarian Customs Houses in deciphering certificates of origin in various languages it has been decided that those documents must in future be drawn up either in the Bulgarian or the French language, or, failing that, must be accompanied by a French or Bulgarian translation, duly certified as correct by a public notary.

The Hooghly Jute Mills Co. is clearing and leveling a newly acquired piece of land preparatory to extending their mill premises. In a circular just issued by Messrs. Gillanders, Arbuthnot, and Co., the managing agents, they say:—"At the outset it is proposed to erect a mill of 750 looms or thereabouts, and a very favourable contract has been entered into for the building. Contracts for machinery are in process of being arranged through our London firm, who hope to benefit by the prevailing scarcity of orders in this direction and by cheap freight, and we trust to complete the laying down of this very important item at most moderate prices."

THE HENRIQUEZ HEMP INDUSTRY OF YUCATAN.—Sir Spencer St. John, the British Minister in Mexico, having been instructed to ascertain the position and prospects of the henriquez or seed hemp industry of Yucatan, has sent a report on the subject by the Vice-Consul at Merida, which has recently been issued by the Foreign Office. From this it appears that the export of Yucatan hemp this year will be nearly 350,000 bales, or 171,250,000 lbs., and it is not thought that under the present conditions the production will exceed 400,000 bales. The only chance of a larger area being cultivated is by immigration, and this is extremely unlikely, owing to the great heat of the climate. The principal markets are the United States and Great Britain, principally through New York, Boston, and Liverpool. Last year the United States took 275,890 bales, and Great Britain 18,175. The report contains much information of a technical character respecting the mode of cultivation, and treatment to procure the fibre, as well as the preparations for export, the methods on which the plantations are worked, and the relation between the planters and their labourers.

WEEKLY & MONTHLY JOURNALS.—The *Dry Goods Chronicle* (New York) says: "To the very concerned monthly contemporary that betrays its irritability at the popularity of the more comprehensive and more bustling trade weekly we would say, 'don't, don't, don't; for—well, for your own sake, don't!' It is, no

doubt, just a wee bit calculated to shake one's equanimity, after working laboriously, faithfully, and ably for years, to find others jumping in and snatching the prize in the shape of a circulation about fifty times larger than that which has rewarded his own toil; but squelching only hastens the inevitable. It is, perhaps, more than a little exasperating for a worthy old-timer, accustomed to receiving grateful and grateful tributes of respectful admiration, to find his best efforts discounted in favour of those tendered by newer aspirants. But the old-timer (except from a monetary point of view) really should not take it so much to heart. No one desires to undervalue the essentially useful services that have been rendered; only a lack number, let the talent displayed in his production have been never so great, is a lack number still—the re-batch, let it be never so cunningly seasoned and spiced, never pleases the palate so well as a fresh roast."

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

The elections having practically been decided, attention is again turned to business. In view of the long-continued depression which has been reported week after week and month after month, it will occasion no surprise when we state that the first subject which has engaged general consideration has been the devising of some method of relief for the trade. There is only one course of any value or potency, viz., a reduction of wages. Longer endurance of the employees under the present burden is simply impossible, as the whole trade is becoming demoralised; and great complaints are heard on every hand of the master in which people, otherwise of the most unblameable repute, endeavour to wriggle out of business contracts that threaten to involve loss. The published losses of the joint-stock spinning companies are undeniably paralleled, if not overtopped, by those of private spinning and manufacturing establishments. In conditions of this kind there need be no wonder therefore if individuals trembling on the verge of bankruptcy, into which the slightest further pressure would tumble them, do mean things in order to shift that pressure away from themselves, and without much consideration for what may be the consequences to the others whom they thus compel to assume the burden. This general restiveness has led to a very large portion of the trade individually approaching their respective associations with demands for summoning a general meeting to take the state of trade into their serious consideration. The result has been that a meeting was held on Tuesday, at which a very strong opinion prevailed that the time had come for the enforcement of a reduction of wages in the spinning branch, this reduction to be 10 per cent. in amount. A general meeting has been summoned for to-day, at which no doubt an important resolution upon the matter will have been taken. The prospect, therefore, is not a pleasant one for the cotton trade, for no method has yet been adopted by which either reductions or advances can be obtained without a trial of strength. Last week closed with a repetition of what is becoming a wearisome experience—a week of unrelieved dullness. "Hope deferred maketh the heart sick" is an old and truthful adage, as the wide experience of employees in both branches of the cotton trade would abundantly prove. India has at last got copious rains, and its prospects are thereby much improved, but this as yet has had very little influence in the way of imposing the demand.

COTTON.—On Saturday morning the market decidedly lost strength in both departments. Spots were lower, though the official quotations remain unchanged. Futures were depressed, and declined a point or two, but subsequently recovered and closed at the opening position. On Monday a slight extension of business took place, owing to the inducements sellers offered to purchasers, in many cases making slight concessions. Other growths than American partook of the irregularity. Futures on the day lost 2 to 3 points, mainly induced by adverse news from Manchester regarding the wages and short-time questions now impending. On Tuesday the market received some stimulus from strong reports, and an advance in prices from America. These were mainly based upon allegations of damage to the crop from rains. Futures went up 2 to 3 points, but soon eased off again, and by the close had lost almost all the improvement. Spots were steady, but all other growths were dull and tending towards ease. On Wednesday the market again opened firm owing to American reports. A fairly good demand came from the trade, and under its influence prices steadied considerably. Brazilians and East Indians were unchanged in value, though a little improvement in the enquiry arose for both. Egyptians were dull, and being offered freely were sold often fully $\frac{1}{2}$ -d. below the official rates. Yesterday there was no material change visible in the

state of the market. The demand for spots fell away considerably, and of the total sales of 8,000, 25 per cent. were set down to speculation and export, a fact which may be accepted as an attempt to square the estimates of the week with the actual sales. Egyptians were reduced $\frac{1}{2}$ -d., and so was Dhollerah. Other growths were unchanged. Futures underwent their usual fluctuation.

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

	Import.	Forward Sales.	Stock.	Annual Export.
American...	29,253	43,358	43,860	1,295,430
Brazilian ..	—	955	1,630	47,410
Egyptian ..	4,811	4,277	1,710	91,730
West Indian	5,407	791	680	44,610
East Indian	1,358	4,256	1,020	51,230

Total .. 40,199 .. 51,617 .. 48,920 .. 1,524,110 .. 11,668

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

	G.O.	L.M.	Md.	G.M.	M.F.
American.....	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
				M.F. Fair.	G.P.
Peranan.....	3 $\frac{1}{2}$	—	—	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Ceara.....	3 $\frac{1}{2}$	—	—	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Paraha.....	3 $\frac{1}{2}$	—	—	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Maranhao.....	4	—	—	4 $\frac{1}{2}$	4 $\frac{1}{2}$
				Fr. G.F. F.G.F. Gd.	
Egyptian.....	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Dingo white.....	4 $\frac{1}{2}$	4 $\frac{1}{2}$	—	5 $\frac{1}{2}$	5 $\frac{1}{2}$
				Fr. F.F.G.F. F.G.F. Gd.	F.G.F. Gd.
M.G. Broach ..	—	—	—	3 $\frac{1}{2}$	3 $\frac{1}{2}$
Dhollerah	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$
Comra.....	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$
Bengal.....	—	—	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$
Tinnevely....	3 $\frac{1}{2}$	—	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$

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

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

	Satur- day.	Mon- day.	Tues- day.	Wednes- day.	Thurs- day.	Friday
July.....	2 50	2 54	2 51	2 54	2 54	2 51
July-Aug.	2 51	2 54	2 51	2 54	2 54	2 51
Aug.-Sept.	2 53	2 54	2 51	2 54	2 54	2 51
September	2 55	2 55	2 55	2 55	2 55	2 55
Sept.-Oct.	2 55	2 55	2 55	2 55	2 55	2 55
Oct.-Nov.	2 55	2 55	2 55	2 55	2 55	2 55
Nov.-Dec.	2 55	2 55	2 55	2 55	2 55	2 55
Dec.-Jan.	2 55	2 55	2 55	2 55	2 55	2 55
Jan.-Feb.	2 55	2 55	2 55	2 55	2 55	2 55
Feb.-Mar.	2 55	2 55	2 55	2 55	2 55	2 55
Mar.-April	2 55	2 55	2 55	2 55	2 55	2 55
April-May	2 55	2 55	2 55	2 55	2 55	2 55
Price of Mid American.	2 15-15	2 15-16	2 15-15	2 15-16	2 15-15	2 15-15
Estimated Sales including Spec. and Export.	3,000	4,000	7,000	16,000	2,000	4,000

YARNS.—The summary of the week's business in yarns last Saturday indicated that the volume turned over had been considerably below production, and left prices weak and irregular. The day brought forth no improvement, the attendance on 'Change being very small. The manufacturing districts are now beginning their annual summer holidays, which in one locality or another will consecutively cover the period from now until the end of September. Darwes and Bentley have led off. On Monday business opened under a perceptibly slacker attendance than usual, and little progress was made. Manufacturers are persistently following their policy of buying only from hand to mouth, and as their requirements are by no means extensive, the business resulting is not large. Prices remained irregular, with a downward tendency. Tuesday was again a very disappointing day for sellers, as manufacturers could not be induced to purchase with any freedom, even with the temptation of further concessions. Yarns were slow of sale all round, and in most cases the turn easier in prices. The aggregate of the business transacted was below the requirements of the production. On Wednesday there was a distinct accession of weakness on the average, though the irregularities of Tuesday were not quite as conspicuous. Only a small business was done in any section. Yarns yesterday were steadied a little by the prospect of a strike or short time, and a few buyers were induced to enter into some precautionary operations. The business, however, was not large with even this inducement.

CLOTHS.—Last week closed without any improvement in cloth. The orders given out by buyers were

both small in bulk and few in number. All the spirit of enterprise seems departed from the trade. As usual on a Saturday there were few attempts to do business. On Monday there was no visible improvement. Copious rains in India have not as yet stimulated a demand for Lancashire cottons, the enquiry for which from this source continues disappointing in the extreme when lowness of prices is considered. Other markets are doing very little in the way of making compensation for India's shortcomings, as they are hardly in any instance maintaining an average demand of their own. On Tuesday there was no change of note. A chief market day usually brings out rather more enquiries than other days, owing to the greater facilities afforded by the presence of manufacturers for negotiating them. There was the usual enquiry of this kind, and perhaps a fair aggregate of transactions put through compared with the low averages that have been ruling for some time. The turn of prices was almost everywhere lower. On Wednesday the expected enquiry on Indian account was still conspicuous by its absence. A few enquiries at low prices were to be met with on China account, but not much was put through. A little better enquiry came from Mediterranean sources. In cloth yesterday there was no important change. On the whole there was a slight increase of enquiry in the miscellaneous departments, but to great increase of transactions took place. In staple articles there was not more than a retail trade put through.

To-day a very quiet feeling pervades the market in every department. The result of the meeting of master spinners' representatives is awaited with interest.

WOOLLENS AND WORSTEDS.

BRADFORD.—Hopes were entertained last week that there would be an improvement on Tuesday in the condition of affairs here, but they have not yet been realised. Business is still poor, and of a retail description. The yarn market is flat. Export merchants have few orders to place from their customers. There has, however, been a disposition to speculate in two-folds, but the offers are so low that spinners have declined to close with them. The slight improvement in the home trade is still maintained, and remains steady. In pieces also the home market is a little brighter, though business with the Continent and the East is very unsatisfactory.

LEEDS.—Business is quiet, but, taken as a rule, machinery is well employed, particularly on tennis suitings, flannels, and ladies' goods. Worsteds are quiet. Travellers are not showing new ready-made goods, and a few satisfactory orders have been booked.

Huddersfield.—A better demand for summer goods would, it is thought, result if the weather improved. There is no special feature of interest in connection with the trade generally.

ROCHDALE.—It is expected that business will soon improve, and that an average amount of goods will be sold. Prices keep firm.

GLASGOW.—Messrs. Ramsay and Co., wool brokers, in their report dated 19th July, say:—“We find the Scotch wool market has been quiet during the past week. The trade is mostly engaged attending the wool fairs in the north, and the reports from these do not show signs of much activity. The next series of public sales will be held in Glasgow on the 27th current, when a large selection of the new clip will be offered. Speculation in the supply has been about an average, with fair competition at fully recent values.”

FLAX AND JUTE.

DUNDEE, WEDNESDAY.—The market continues listless. *Jute* looked a week ago like firming up, but large sales on the spot have forced values down, and to sell *jute* still lower rates are essential. For new there are buyers at £12, but over this it is difficult to do business. It is now unfortunately clear that holders of *jute* have made advances upon it over its value, and this adds confusion to the already irregular and depressed *jute* market. In a very short time one hopes to see business resumed on a firm and satisfactory basis. The new crop is still being well spoken of, and values now are safer for future business. In the *manilla jute* yarn may be quoted 3½d per pound cheaper all round than it was a fortnight ago. Hessians also are easier to buy; but since yesterday some considerable enquiries are made, showing that the orders to buy exist, and that agents only wait to be assured that the bottom has been reached. *Flax* is in all positions quiet, and there is very little doing for K; the nominal price is £7 10s. to £18. *Flax* of fine quality is difficult to buy, and the price of it is firm. For *fine* raws for warp yarns there is an eager enquiry, but it is difficult now to get qualities suitable for prime warp. *Flax* yarns are dull with little business passing. Tow yarns are also quiet, especially heavy wefts. Linens are very quiet and one bears of Brechin losses running short time, a most unusual thing. The

General Election has greatly disorganised the home trade. The demand for *jute* *Cowls*, harvest twines and rope increases; this, indeed, is the healthiest part of the trade at the moment.

BELFAST.—There is an improving tone in the market, and more inclination is shown to do business. The movement in yarns is regular, and spinners have orders ahead for some time to come. Brown power-looms, though not active, are being bought in fair quantity at low rates. Ballynassas keep rather slow, but County Down has considerable attention. Finished linens for home account are being taken off better, and the shipping trade is also expanding.

DRY GOODS.

MANCHESTER.—The condition of the silk trade, which is very depressed, is referred to at length in another column. There is not much doing in any department just now, and it will be a few weeks before we shall be able to report anything of special interest in connection with the local trade.

HOSIERY AND LACE.

NOTTINGHAM.—The fancy lace trade continues depressed, the French competition being very severely felt. Good quantities of cotton laces are being disposed of. Some new goods have been brought out, and are attracting a fair amount of attention. The demand for Valenciennes is quiet. Common descriptions of cotton laces are being produced less freely, but even now it is not easy to prevent accumulation. Irish tricotings are selling pretty well, and there is a steady demand for everlasting trimmings and auto-lineries. No improvement has occurred in the sale of light silk rattles, but makers of silk veilings are fairly well employed. The plain cotton net branch is stagnant. The amount of business doing in stiff foundation nets is very small, and mosquito nets do not meet with a brisk sale. Orders for lace curtains, window blinds, anti-macassars, etc., although large, are insufficient to afford full employment. In the making-up branches most of the firms are kept steadily employed. In the hosiery trade some firms have pretty good orders on hand, but the general demand is disappointing, and the low level of prices is a constant source of complaint.

LEICESTER.—The yarn market is quiet as regards new orders, but stocks are kept down by the larger deliveries. The hosiery trade opens up fairly well in all departments, while in several branches there is great activity in contracts for home and export markets.

Joint Stock and Financial News.

NEW COMPANIES.

JAMES ROBERTSON AND CO., LTD., DUNDEE.

Capital, £22,000 in £20 shares. Object, to purchase and acquire the business and the whole or part of the property and assets of Messrs. Watson, Robertson, and Co., spinners, manufacturers, and merchants, Dundee, and to carry out an agreement entered into between James Low, Mount Rosa, Broughty Ferry, who had purchased the business, and William Kettie, merchant, Dundee, on behalf of the company; also to enter into any new agreement with James Robertson and Co. and to carry on the business of flax, hemp, and jute spinners and manufacturers, hosiery, broadcloth, and carpet manufacturers, and twine makers and merchants. *Scribers:*—

- J. Robertson, merchant, Dundee..... 1
- Mrs. Jane Robertson, Dundee..... 1
- W. Lindsay, merchant, Broughty Ferry..... 1
- Mrs. Ann M. Lindsay, Broughty Ferry..... 1
- J. Low, merchant, Mount Rosa, Broughty Ferry..... 1
- Mrs. Catherine Low, Mount Rosa, Broughty Ferry..... 1
- W. Tow, merchant, Dundee..... 1
- W. Kettie, merchant, Dundee..... 1

The first directors are Messrs. James Robertson, William Lindsay, James Low, William Low, and William Kettie. Mr. James Robertson to be managing director at an annual salary of £700.

OPENSHEAV OIL CLOTH COMPANY, LIMITED.

Capital, £22,000 in £10 shares. Object, to acquire the undertaking of the Imperial Oil Cloth Co., Ltd., and to develop and extend the same; with a view to the acquisition of the above, to carry into effect an agreement made between the Imperial Oil Cloth Co., Ltd., and the Liquidator thereof of the one part and this company of the other part, and, generally, to carry on and extend the same. There shall not be less than three nor more than seven directors; the first to be determined by the signatories to the memorandum of association. Qualification not specified. Remuneration to be fixed by the company.

Patents.

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- 12,581 HARGREAVES AND SMITH. Measuring, etc., textile fabrics.
- 12,679 RAARK. Making yarns from vegetable waste fibres.
- 13,276 HARGREAVES. Drying textile goods.
- 13,955 GRAYTIE. Dyeing and printing textile fibres with aniline, etc.
- 14,402 BARBOU. Wet spinning frames.
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- 6,497 BOULT (*Looms*). Weaving thread into cops.
- 7,555 SCHURCH. Oxidation of aniline black in dyeing cotton thread, etc.
- 9,751 BARKER (*Waves*). Knitting machines.

ABSTRACTS OF SPECIFICATIONS.

RAW MATERIALS, SPINNING, WEAVING, ETC.
2,458. Feb. 19, 1890. **Spinning.** E. DE PASS, 78, Place de la Madeleine, Paris.

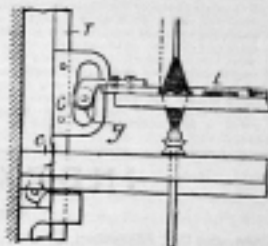
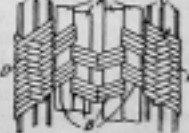


Fig. 1000.—Relative means for automatically regulating the tension of the yarn while winding is taking place on different parts of the chase. For this purpose flexible contact pieces formed of cloth or thin leather are caused to approach and exert a resistance upon the travellers when winding is taking place on the larger diameters of the chase, while, when winding is taking place on the smaller diameters, the travellers or the yarn are assisted in their revolution by means of a travelling band. The flexible contacts may be carried by a bar L, which is traversed longitudinally at each row and full of the ring rail by means of a chain arrangement, e.g. the cam being carried by a vertical bar T provided with a ratchet arrangement c, which is so arranged that the bar T remains in its lowest position during the formation of the cop-buttions, and is therefore raised incrementally at each traverse of the ring rail. The travelling cord for accelerating the travellers on the smaller diameters during the winding on one part of the chase may be stopped and caused to act as a brake during the winding on another part.

2,459. Feb. 19, 1890. **Brass.** A. E. ALDEN, 25, Southampton Buildings, Middlesex.—(J. Goodman, 20, Strand, Inventor.)



An open-weft main band, consisting of elastic warp strands A connected by binding threads B, is provided on each side with an edge-binding, consisting of un-covered elastic warp strands C having a closely braided covering D, which is interlocked with the edges of the main fabric.

2,476. Feb. 19, 1890. **Fabrics.** L. CHATEL, 43, Boulevard de Strasbourg, Paris.

Woven and knitted fabrics are made of rabbits' hair or other animal hair, either pure or mixed with wool or silk, by the use of fine threads formed of the said materials and of cotton or other textile vegetable material, the latter serving only as a temporary support to the threads and being subsequently incriminated by a chemical bath and removed. The fabric possesses softness, pliancy, and elasticity, and (when wool is employed) great strength, and (when silk is employed) the power of resisting shrinkage. In woven fabrics a weft or warp of pure wool may be employed, or part of the weft or warp may be of pure wool for forming squares or striped effects. In knitted fabrics the front may be of pure wool and the back of hair. The hair, before being

mixed with the wool, is impregnated with oil or other fatty substance during the combing or carding.

3.057. Feb. 25, 1913. **Jaquards.** H. B. BANCROFT, Treasurer Mill, Newton Heath, Manchester.

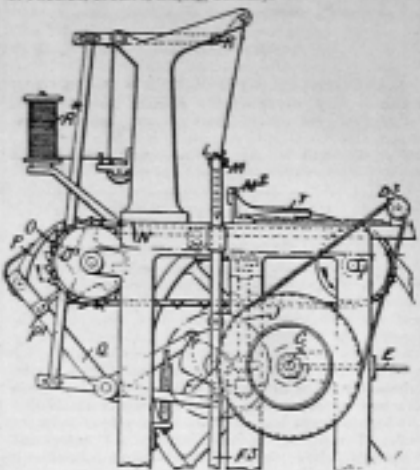
Relates to means for controlling the number of cards employed in jacquards for weaving or otherwise manufacturing textile fabrics, in which figure positions are separated by large plain portions. The card cylinder is turned by one of two pawls *a*, *a'*, controlled by novel mechanisms with lifting levers *f*. When two or more ground cards have separated (after a figure position has been woven) the hook *j* is raised by the gripper *g* and puts the pawl *a'* out of gear; at the next pick the pawl *a* is put into, and the pawl *a'* out of action, and so on. A measuring motion consisting of gearing *k*, *l* is put into action, when the ground weaving commences, by the descent of a pawl *j* acting on a ratchet wheel *h*, each pawl being carried by a rocking lever *i* and controlled by a cord or link *m*. A stop *n* on the wheel *h* acts through a lever *o* and controlled hook *p* on the hook *c*, so that at the end of the ground weaving the hook *a* is not lifted, and the figure weaving commences again. A pawl *q* and hand coil *r* are provided for raising the measuring apparatus. By means of a hand coil *s*, the pawl *a* is held up for measuring. The arrangements may be modified.

3.061. Feb. 25, 1913. **Wadding.** J. FORDHAM, Newcastle-on-Tyne, Hesses, Nassau, Prussia.

Relates to the manufacture of cellulose wadding, applicable for packing and for medical and surgical purposes, or as a substitute for animal cotton wadding or carded cotton wool. Wood pulp (such as that from cellulose factories), or similar vegetable substances, is cleaned and then beaten up, washed, and dyed in a mangle. The material is then placed in cans, and water is added, mechanical stirrer keeping the whole in agitation. The turbid fluid is then fed on to an endless travelling wire-cloth strainer, from which the wet sheet is taken up by an endless apron and wound on a drying cylinder. When dry, the flimsy cobweb-like sheet is removed by a scraper and runs down a shoot in a loose crumpled mass to a revolving drum, upon which it becomes lapped, and is passed by a roller. It is then cut, removed, and pressed again into a finished bat, and may afterwards be cut into slabs. Or the mass from the shoot may fall into frames or receptacles in which it is consolidated into slabs by weighted covers. *Drawings.*

3.055. Feb. 25, 1913. **Spinning.** W. and D. McGEE, Paisley. *Thread-winding machine.*—In "angular" winding machines in which two frames set at an inclination to each other are furnished with a number of horizontal rows of spindles, the spindles are driven by level gearing, level wheels on the spindles gearing with bevel wheels on longitudinal shafts, which are driven by toothed or chain and bevel gearing from a central countershaft, which also drives the building mechanism and the belt pulleys or cone of the thread polishing machine, when the latter machine is employed in conjunction with the winding machine so as to modify the cone. The building mechanism is arranged within the regular framework of the machine instead of at the ends as usual. *Drawings.*

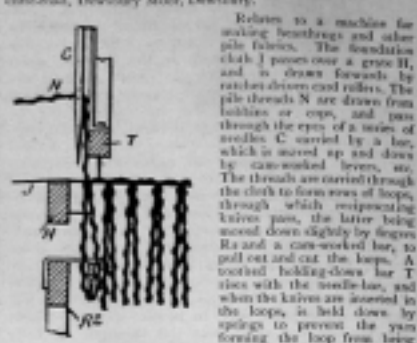
3.124. Feb. 25, 1913. **Jacquard cards connecting.** G. FALKNER, Bochum, Leipzig, Germany.



Relates to a machine in which the cards for operating the various parts are mounted on a shaft *F* driven from a pulley shaft *C* through spur gearing. The shaft *C* is provided with two clutches, operated simultaneously by a handle *E*, for putting the machine and a spool winding mechanism *D* into or out of action, as required. The needles are carried by a bar *L*, moved up and down by cam-worked slide-roads *F*, the needle threads passing from spools *H* over a cam-worked draw-off reel system *R*, and beneath springs *M*. The latter, when the needles descend, bear against a stationary rail *M*, and clamp the thread so that loops for the shuttles are formed during a slight initial rising of the needles. The shuttle holder is reciprocated by a rod and crank from a vertical shaft *J* driven by toothed gearing from the shaft *F*. The cards are placed on endless chains *N* travelling over suitable pulleys and made with studs making into the cylindrical holes of the cards. Springs *T* press the cards on to the chains. The cards are fed by a toothed wheel *O*, operated by a pawl *P* on a cam-worked lever *Q*, a link *P* on the latter regulating the travel of the pawl *P* according as it enters between the teeth of a second disc *Q* or presses on the back of a tooth of the same; by these means the varying feed required by the different

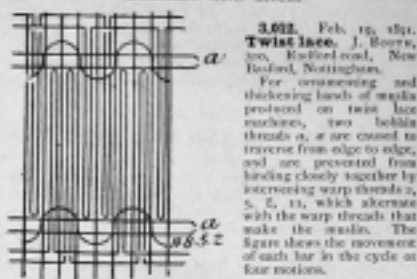
distances between the card facing holes is effected. A packing apparatus may be combined with the machine.

3.111. Feb. 25, 1913. **Pile fabrics.** J. BAILEY, Staincliffe-road, Dewsbury Moor, Dewsbury.



Relates to a machine for making hosiery and other pile fabrics. The foundation cloth *J* passes over a groove *H*, and is drawn forward by ratchet-driven card rollers. The pile threads *N* are drawn from pile bobbins or cops, and pass through the eyes of a series of needles *C* carried by a bar, which is moved up and down by cam-worked levers, and by cam-worked levers, so that the threads are carried through the cloth to form rows of loops, through which reciprocating knives pass, the latter being moved down slightly by fingers *R* and a cam-worked bar, to pull out and cut the loops. A worked holding-down bar *T* rises with the needles *C*, and when the knives are inserted in the loops, it holds down by finger springs to prevent the yarn forcing the loop from being pulled down during the cutting. Devices for sharpening the knives may be provided.

HOSIERY AND LACE.



3.092. Feb. 15, 1913. **Twist lace.** J. BOYER, 205, Radford-road, New Bedford, Nottingham.

For ornamenting and thickening levels of wools produced on twin bobbin machines, two bobbin threads *a*, *a'* are caused to traverse from edge to edge, and are prevented from breaking closely together by increasing warp threads *b*, *c*, *e*, *f*, *g*, which alternate with the warp threads that make the wools. The figure shows the movement of each bar in the cycle in four motions. [See also 3,037 under "Raw Materials."]

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