The

Textile Mercury:

A Representative Weekly Journal for

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

In all Branches of the Textile Industries.

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The Textile Mercury.

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Current Topics.

SUB-EMPLOYES IN A COTTON MILL; WHO SHOULD BE RESPONSIBLE FOR THEIR INFRACTIONS OF THE LAW?

The question of protected hands working during meal hours is receiving particular attention from the inspectors supervising the cotton industry. In the spinning branch of the cotton trade there is a kind of divided employership in relation to this particular class of workpeople, but this perhaps more probably applies to the spinning than to the carding departments. In the former these are what are known as "little piecers," who are, as a rule, engaged and discharged by the minder-spinner, although the employer, through his foreman, claims the right of exercising authority over them, and if an edict from him be not obeyed, then the minder places his own position in jeopardy. But the factory inspectors hold the employer directly responsible in cases of this kind for any breach of the Factory Act. Even if he post notices in his mill forbidding work during meal hours, and conveying the intimation that minders are held responsible for piecers being employed contrary to his orders, inspectors all the same hold him responsible, unless, as they say, he satisfies them that he has taken every possible means to prevent a breach of the Act indicated, not only in forbidding work in meal hours, but by having some authorised person on the premises to see that the minders do not set the little piecers to do any manner of work, nor that they do it of their own accord. Under such conditions one need not evince surprise that a magistrate recently expressed the opinion that "he did not think the owners of cotton mills could possibly prevent boys and girls cleaning machinery during meal hours." Inspectors, however, contend that employers can, if they are so inclined, put a stop to the practice. And thus the position stands. There are instances not wanting, however, where employers have proved to the satisfaction of these myrmidons of the law that they have done everything to meet the requirements of the Act of Parliament, and in such cases the minder has been summoned. Now this was a proper course to take, and one to which not the slightest objection could be raised. But employers, as a rule, either out of goodness of heart, or for some other reason, have paid the penalty and costs in which the operative was mulcted. In this manner they have laid themselves open to the charge of having practically connived at the breaches of the law and been accessories after the fact. No greater mistake on their part could be made in this respect, because it gives people the impression that they wink at law-breaking. It has, moreover, another and more serious effect, and that is, that they lose caste in the eyes of the operative, and also lose control over him. Under present conditions, it would appear that the practice complained of is difficult to stamp out, and the treatment of it touches upon the important question as to the time which should be allowed for the purposes of cleaning and oiling the machinery. This subject has been before the Oldham Employers' Committee, but we believe it was relegated to the United Cotton Spinners' Association for treatment, as it was felt that its bearing had more than a local application. With the settlement of the matter on liberal lines, much will be done towards putting an end to the employment of protected hands during meal hours, and thus preventing misunderstandings between employer and employed.

LAMENTATIONS FROM NOTTINGHAM.

We are accustomed by this time to hear Nottingham people complain, and that, too, in a very forcible manner, with regard to the staple industry of the town. So used has the public ear become to these laments that it would be a matter for surprise if they ceased. Nottingham, apparently, is "booked" for a long spell of depression. Whether the circumstance is due to the lack of knowledge, taste, or enterprise amongst its manufacturers we do not care to say. If one accuses a Nottingham man of inferiority in comparison with Calais or Plauen he will reply that those centres are complaining quite as loudly as is his own, the inference being, of course, that the suggestion of inferiority falls to the ground. Your true Nottingham man resents with scorn and indignation the idea that he is in any way behind the foreigner. But the periodic lamentations with which he assails the ears of the world, ever seem to remind us that something is wrong. If we examine into the statements now being made by those interested in the industry of the Midland metropolis, we hear it declared that the state of trade has never been so bad in living memory, not even in the years 1857 and 1858, for at that time the small amount made was sold at a profit, but to-day there is neither demand for nor profit on any kind of lace. The great difficulty against which Nottingham has to contend now is unfair competition from small machine holders, who work their own machines, and who—those referred to in particular are in the lace districts surrounding Nottingham—take their week's produce to the lace market on Friday and Saturday, sell it before coming away at some price, and pay their wages with the proceeds. Cotton spinners, factory owners, and machine owners must take their chance; the probability is that they will remain unpaid, as usually when an estate of this kind is wound up there remains nothing to pay with. Having obtained an article in this way, warehousemen will not give legitimate traders a larger price, and they must work on these unreasonable terms or stop altogether, and by doing so lose a connection

which may have taken years of labour to build up. The difference in rack price between the legitimate trader and the first-mentioned is, when reckoned in a dozen of lace, very small, and the prices obtained for the finished article warrant the increase. And yet, notwithstanding all this, the recently-formed lace concern of Davenière and Co., Limited, Calais, is able to declare a dividend of seven per cent. on its £200,000 capital.

THE PRINCESS OF WALES'S COLLECTION OF LACE.

The handicraft of lace-making, which once flourished in Buckinghamshire and Devonshire in this country, and in several places in Ireland, has now shrunk to small dimensions, and will probably in less than another generation entirely disappear, unless the efforts being made in Ireland are successful in postponing the event a generation or two longer. It is very rare, however, when an industry has been reduced by competition to the point of becoming an object of philanthropic benevolence, for it to get upon its feet again. What is wanted to maintain an industry in health is that the public shall purchase and use its productions, consuming them in wear. When this ceases the outlook for it is not good. Once upon a time, say during the last century, lace-making flourished, because lace was in commercial demand, but very soon after the invention of the lace machine and the application to it of Jacquard's invention, it began to decay, because the mass of the upper and middle classes, who had all been consumers of hand-made lace, contented themselves with the mechanically-made substitute. This left an insufficient constituency of consumers desirous of having and also able to pay the high prices necessary to procure the genuine article and to maintain the industry in a healthy state. Owing to this a great shrinkage has taken place in this country, which has, indeed, proceeded to the verge of its extinction. Hence the execution of very high-class work in lace is now very rare, if indeed it be possible. Good lace has, therefore, become very scarce, and its possessors look upon every piece as a rarity likely to increase rather than diminish in value. Such are, therefore, carefully placed in cabinets for exhibition, rather than worn, consumed, and replaced with new. This, of course, whilst very interesting from an antiquarian point of view, does nothing for the present industry. Amongst the leading collectors of old laces, if we may believe a paragraph which is on its journey round the press, is the Princess of Wales. When Her Royal Highness was married she received from the King of the Belgians a wedding present of rare and valuable old laces, worth, it is estimated, £10,000. This the Princess has made the basis of a collection that is stated to be now worth £60,000, which she has collected in the interval. The pursuit is essentially a lady-like one, and does honour to her taste, and at the same time it honours her sex, this being especially the fruit of woman's industry.

A LACE EXHIBITION.

Though the handicraft lace industry has almost disappeared, at least from this country, its great and successful rival, the machine-made article, is not always in demand, nor is the producing industry always in a state of prosperity. The very power—that of cheap production—which enabled it to drive the handicraft pursuit out of the field, is to some extent the cause of its neglect. Whenever public taste shews a disposition to bestow favour upon laces, and the article becomes fashionable, its degradation by almost universal adoption is very near. Cheap imitations of the best articles made are turned out in such vast quantities that lace speedily becomes everybody's wear, and of course the upper sections of society then abandon it. The certain result is that lace, as an article of feminine wear, has a long season of neglect in front of it, and the makers, of course, correspondingly suffer. It is during such periods that we sometimes think the advent of better times might be hastened if the trade were to inaugurate an exhibition of the most tasteful designs produced by the best lace looms of Nottinghamshire. To make this all the more successful in drawing the ladies, it might be possible to get the loan of the contents of the best lace cabinets of the country, including those of H.R.H. the Princess of Wales. Laces having interesting historic associations, as well as the choicest specimens of the art, would possess great attraction, and might be usefully introduced. This is a suggestion that we think may be commended to the consideration of those interested during the duller seasons of their trade. The benefit likely to accrue would not be confined to the business that might result amongst those persons who visited the exhibition; if they succeeded in giving lace the vogue, "all the world" would wear it, and then would be the harvest time of its manufacturers, of which we have no doubt they would speedily avail themselves, though it might not be of long duration.

"INDUSTRIAL COLONIES" IN IRELAND.

Nearly twelve months ago the newspaper public was surprised to learn that a plan for establishing industrial colonies in Ireland had blossomed at Boston, and was almost ripe and fit to be put into practice. As need hardly be said, the Boston was that of Massachusetts, not Lincolnshire, and there was, of course, a political motive at the bottom of the proposal, with which we have nothing to do. The idea was to form a company with a large capital in shares of small amount, so as to set up factories to give employment to evicted tenants, and to find a sale for the articles produced among all sympathisers with Ireland's alleged wrongs in other parts of the country and elsewhere—goods in general demand, boots and shoes, clothing and underwear, being the first to be taken in hand. Other benefits, such as the good example set to Irishmen in idleness by seeing people busily at work, and the introduction of fresh methods of business and manufacture, were to be thrown in, and, on the whole, a radical change and good times coming were hopefully anticipated. Now that so long a time has gone by without any sign of action, some sceptical folk are getting as incredulous about the plan as Betsy Prig was about the reality of Mrs. Harris: they "don't believe there's no sich a" plan with any prospect of being carried out. Journals formerly favourable begin to write about the matter in a derogatory way, and to mention Utopia in connection therewith, while gentlemen whose names have been linked with the affair appear eager all at once to deny all knowledge of its existence. But the *Irish National Colonist*, published in Boston, through which information was first given to the public, is still unmoved, still sanguine, and continues to speak of the plan in the present tense. Full details of what is intended to be done "cannot be given out yet, but they will probably be developed in the course of a few weeks. . . . . The men who are promoting the scheme recognise the fact that the only way for them to attain success in it is to shew their personal interest by going across themselves, and getting operations fairly started. The whole party might consist of fifty men, and lumber for factory buildings will probably be taken from Newfoundland. These men are principally sons of Irish tenants, who were forced to come to this country from twenty to thirty years ago. Some of them are skilled mechanics, some good workmen, and others men that have had good general, practical business training." These are all the particulars yet vouchsafed to us. We must wait for the arrival of the men who appear to be skilled mechanics but not good workmen, and for those that accompany them, who will bring with them that inexplicable lumber for buildings from Newfoundland, and then we shall see—what we shall see.

CARPET MANUFACTURING IN FRANCE.

Private enterprise in carpet manufacturing is hampered somewhat in France, by reason of the Government establishments of the Gobelins and at Beauvais producing a considerable quantity of carpets of the very best quality in their own peculiar style; the number of private factories therefore is not large. The chief centres of the manufacture, exclusive of the Government ones, are at Aubusson, and in the department of the Nord. Carpets of almost every conceivable kind are made, but the quantity manufactured of first rate quality is slightly less than that of an inferior type. The demand for Oriental carpets is steadily increasing, and vigorous efforts are being made by several French houses to produce some of the best examples of this style ever placed on the market. Foremost among these enterprising manufacturers is M. Ferdinand Leborgne, who has an important establishment at Lannoy, in the department of the Nord. It is impossible to obtain any reliable figures as to the number of looms in the different French establishments; there are no official statistics, and the manufacturers invariably decline to give such information in response to private inquiries. The relative number of hand and power looms in use depends on the extent of the establishment in which they are found, but as a general rule the hand looms are in the proportion of about four to one power loom. The number of men employed in the manufacture of carpets is very considerable, Aubusson alone having about sixteen hundred or two thousand of them, distributed among ten or twelve different houses, while a large number of hands are also employed at the Gobelins and in Beauvais. It may be remarked in passing that though Paris is the centre of great industrial activity, it is far from taking the first rank for the manufacture of carpets. Wages fluctuate from time to time, but since the last quarter of a century they have risen a great deal, especially in Paris. At present wages rise more quickly in the provinces than in the capital, but in spite of this the Paris workmen are far better paid than their provincial brethren, as the following table will shew:—

	Wages in Paris.	Usual wages.
Foremen.....francs,	7·00	5·50
Overseers, markers	5·50	4·00
Workmen above 21 years old.....	5·00	3·50
Workmen from 15 to 20 years old....	3·00	2·00
Women	2·50	1·75
Boys.....	1·75	1·25
Girls.....	1·50	1·00

In some places the workpeople are allowed their food, and in others are both fed and lodged, in which cases the figures given above are usually reduced in the proportion of from one-fifth to three-fifths. All ages and both sexes work twelve hours daily, except apprentices, who work ten hours only. The number of women and girls employed amounts to nearly 50 per cent. of the entire number of hands. Though the demand

for female labour is always considerable, the wages given to women and girls shew few signs of increasing in the same proportion as the men's, which is explained by the great abundance of the supply of female labour.

CARPET MANUFACTURING IN GERMANY.

In carpet manufacturing small factories are the rule in Germany, although at Duren the firm of Schöller Brothers have a shed containing about 200 power looms and employing 500 operatives. In this factory Brussels, velvet, and tapestry carpets are produced. The Barmen carpet factory has about 45 looms, and its chief product is piece goods in rolls (Brussels and Tournay or Wilton) in a width of 68 to 70 centimetres. The factory possesses, in addition, a loom for goods 90 centimetres wide, and several looms in which full size carpets (130 centimetres —3 yards—wide and upward) can be woven. A number of the narrow (68 to 70 centimetres) looms were last year employed in the production of furniture stuffs resembling carpets, which are brought into market partly in running metres and partly in full sizes. The former is the so-called "Moquette stuff;" the latter are known in the English and American markets as "saddle-bags," and are manufactured in the factory in question in the following sizes:— 45×45 centimetres, 55×58 centimetres, 70×70 centimetres, 70×135 centimetres (the so-called "divan lengths"), and 90×180 centimetres (Daghestans). While the Moquette stuff is only made in one quality, the saddle-bags are produced in two—viz., a fine Moquette quality and a coarse Tournay quality. Notwithstanding the fact that the former is the dearer of the two, it is far more saleable. The following statement of the weekly wages paid in Gera is an abstract from the pay roll of one of the principal establishments, and may be considered as correctly representing the wages paid in all factories:—

Weavers of ordinary carpets, hearth-rugs, and shoe findings	13/10 to 15/10
Weavers of sofa and table covers	16/10 ,, 18/10
Weavers of superior quality of carpets	17/10 ,, 19/10
Packers	16/10
Shearers	15/10 ,, 17/11
Spoolers, women	7/11
Dressers	14/11
Drawers, men	9/11 ,, 11/11
Drawers, women	7/-
Pickers, women	9/11
Carpet cleaners, women	7/-
Overseers	37/3

The hours of labour are from 6 o'clock in the morning until 7 o'clock in the evening, excepting thirty minutes for breakfast, an hour and a quarter for dinner, and thirty minutes for vespers.

THE JAPANESE SILK TRADE.

Japan, it is well known, is one of the most important fields of production of raw silk, and would seem to be rapidly displacing China in that respect. The protected American silk trade seems to find Japanese silk the most suitable for its requirement, and has consequently secured for several years past the largest part of the crop, as will be gathered from the following statistics of the silk trade of the country for the last 12 years, which were issued in Yokohama after the close of the last season, June 30th. The figures exhibit besides some curious features. The trade is practically confined to the port of Yokohama, the export from Hiogo being only 500 bales, while that from Yokohama last year was 35,505 bales. In 1887-8 the export was 38,958, and in 1888-9 41,264 bales, so that in 1889-90 there was a decline; but the expansion in the trade in recent years has been remarkable. Prior to 1887-8 the export never reached 30,000 bales and was usually under 25,000, and sometimes even less than 20,000. As for the destination, an average of 20,000 bales during the last three years went to the United States, and an average of between 16,000 and 17,000 bales to the Continent of Europe, including Great Britain, to which not one bale was sent direct last year, although 2,070 bales came in 1888-9 and 1,735 in 1887-8. Some of the shipments to the Continent, however, ultimately come to London. Another curious feature of the trade is that the shipments on Japanese account are declining, shewing that the efforts of the Japanese Government to foster a "direct trade," *i.e.*, a trade wholly in Japanese hands, are not successful so far as silk is concerned. In 1880-1 the shipments on Japanese account were 2,940 bales; in 1881-2, 5,089; in 1883-4, 6,348; in 1885-6, 3,933; in 1888-9, 2,826; and last year 2,495 bales, or less than the figure of nine years ago, although the total export in the same time has risen from 22,344 to 35,505 bales.

IMPROVEMENTS IN THE PRINTING OF WALL PAPERS.

The processes employed in the production of wall papers so closely resemble those of calico printing, that reference here to recent developments in the trade may not be out of place. We are indebted for the information herewith presented, to Messrs. Walker and Carver, of Orchard-street, Pendleton, who have a large number of machines and employ about 200 hands. It was Mr. Walker's father, we believe, who first produced washable hangings from engraved rollers. This marked a distinct step in advance, but the surface roller until quite recently could not be employed, strictly speaking, for the printing of these articles. As the colouring given by this method is considered superior to that of the engraved roller, paper hanging manufacturers endeavoured to discover a process for producing sightly "washables" by the surface cylinders. This has now been accomplished by the firm referred to, who are turning out an immense variety of styles and patterns in self and mixed colours without the glossy effect that has hitherto been the great drawback to the so-called surface roller washables. High-class decorations, as a rule, contain mixtures of animal size, which is unfortunately subject to atmospheric influences, producing decomposition, and, as a natural sequence, contaminating the surrounding air. Many obnoxious *effluvia*, the cause of which is frequently ascribed to faulty drainage, arise in reality from wall papers, of which this animal matter forms a component part. By the new process referred to above a resinous substance is employed in the place of the objectionable size, so that a further advantage is secured. It is interesting to note that the firm to whose study of the question we are indebted for the latest discovery were the first to demonstrate the practicability of multiple colour printing, which undoubtedly gave a considerable impetus to the industry. One of the most important developments of the trade, as seen in the productions of the Pendleton concern, is the success which has been obtained in imitating by machinery the hand block effects which William Morris and a host of smaller fry sell at fancy prices to the wealthy classes. The machines at work at Orchard-street give that sharp outline which forms one of the principal attractions of hand-printed goods, and to imitate which for a long period defied the skill of the manufacturers by power.

PROTECTION FOR FRENCH SERICULTURISTS.

The sericulturists of France have now joined the noble army of protectionists, a grand "manifestation" on the subject having taken place on the 10th inst., at the Hôtel de Ville, Avignon, under the presidency of M. Bérenger, a senator for la Drôme. We need not reproduce the list of those present at the meeting, but it may be stated that amongst them were included a goodly sprinkling of deputies and senators. Few facts in addition to those already known came out at the gathering, previous claims being simply repeated. The growers demand a duty of half a franc per kilogramme on fresh cocoons, 1½ francs on dry cocoons, 7 francs on raw silk, and 10 francs on thrown. The arguments of the president, M. Bérenger, who opened the proceedings with a long discourse, have, however, taken a somewhat different direction of late. The low price of cocoons is no longer brought forward as a plea, for the growers can no longer say that 4 francs as a minimum price is absolutely necessary, that figure having already been largely exceeded without the stimulating aid of protection. M. Bérenger is now on another tack entirely. He says: "Oats, wheat, and maize are protected. Why, therefore, not protect cocoons also?" To this Lyons replies that it is easy to explain the partiality which grieves M. Bérenger so sorely. In imposing duties on oats, wheat, and maize, the urban population is mulcted for the benefit of the agriculturalists, the consumer alone being injured. But duties on the raw material required in a great industry such as that of silk, whose products are exported very largely, on the contrary strike at the very source of its prosperity. There is a vast abyss between the two orders of things, which no argument of M. Bérenger's friends can bridge. The *Bulletin des Soies et des Soieries*, speaking on behalf of the manufacturers of Lyons, says that the desire of protection is to protect and encourage industries. But if, in the application of this principle, two interests find themselves ranged on opposite sides, ought not the claims of the more powerful to receive prior attention? Our contemporary further asks whether in considering such a question one can hesitate between the claims of the silk manufacture, which adds from 200 to 300 million francs per annum to the wealth of France, and that of silk culture, which only adds from 50 to 60 millions? It certainly looks as though protection in this instance would be much more logically carried out if the exception "which proves the rule" were made in favour of Lyons.

GENERAL BOOTH "CONVERTED:" A CURIOUS PHENOMENON IN SOCIALISM.

That nebulous sentiment which for want of a more accurate name has been miscalled Socialism is responsible for many inconsistencies and incongruities. Under one or other of its several manifestations it has laid siege to politicians, statesmen, and imperial autocrats, and amongst each of these classes has made captives. To the veiled Socialism of "Irish patriots" a distinguished English statesman has succumbed; the head of the most powerful empire in Europe has also been captured, while the autocrat of all the Russias has hitherto proved unconquerable, though assailed perhaps more strongly than any other person. But of all the captures the movement has yet made perhaps the most incongruous and inconsistent is that of 'General' Booth, the autocrat of the "Salvation Army." The 'General' has been wonderfully successful in dealing individually through his different agents with the populations of

various countries, but this process is evidently too slow and he has apparently determined to save society wholesale. It is announced by a correspondent of the Manchester *Examiner* that the 'General' has been converted to Socialism under the "coaching" of Mr. W. T. Stead and a few others, and that he had been led to his present conclusions before he really knew where he was. That statement, however, we cannot credit, being disposed to believe that the head of the greatest religious movement of this century is a man head and shoulders cleverer than his alleged mentors. If 'General' Booth goes in for Socialism, it will be a Socialism of a very different and more practical character than that of which his teachers are dreaming. We are also convinced that it will be much less immoral than that which is dimly outlining itself in the imaginations of the adherents of this modern movement. In the latter Socialism is little more than a belief that it is proper to confiscate as soon as possible all property and wealth from its present possessors. What they intend shall be done with it is not clear to their minds, nor even to those of their leaders, but there need be little hesitation in affirming that there would be a general scramble for its possession or as much as each could obtain. 'General' Booth has, however, apparently other designs, for it is stated he intends appealing for a million of money to purchase lands and institute agricultural training homes and industrial villages on more or less of a socialistic basis. This looks like a second edition of Robert Owen's plans, except that charity is substituted for self-help. But where Robert Owen and Fergus O'Connor failed, it is difficult to conceive that 'General' Booth will succeed, unless he retain autocratic power in his hands, and this will, we suppose, be abhorrent to his disciples who ought and will demand to share equally in the power of disposing of what is acquired. If 'General' Booth, in his earlier days, could not get along with a committee in carrying into effect his philanthropic schemes we fear that his failure in the position he now seems to be seeking will be still more signal. He however, possesses a knack of "turning an honest penny" in his benevolent schemes, and we may rely upon that if he should get a full response to his appeal he will take care to keep a firm hand upon the money, however much the socialists may declaim against his doing so. Perhaps, too, he may be trusted to make a better use of it than they, uncontrolled, would do, for with a democracy invincibly ignorant a benevolent despot can only be regarded as an unmitigated blessing. Extremes will thus once more meet, as they did under the *régime* of the late Empire in France.

COLLAPSE OF LOMBE'S SILK MILL, DERBY.

One by one the old landmarks of industrial history steadily disappear. In connection with the textile trades hardly a more interesting one could be found than Lombe's Silk Mill, Derby, built in 1718, that is 15 years before John Kay invented the fly shuttle. Lombe's story is well known, and has been told in these columns *(Vide The Textile Mercury*, July 13th, 1889*)*, accompanied with an illustration of the mill. The latter, which Lombe built upon a small island in the Derwent at Derby, was the basis of a movement that revolutionized the English silk trade. It has long ago ceased to be used for its original purpose, and has for a considerable time been in a more or less unstable condition. A few years ago several hundred pounds, we believe, were expended in making it secure, in preference to dismantling it. Of late it has required further assistance of like kind, and men were within the past week or two engaged in shoring it up. On Sunday, however, in spite of these efforts, a portion of the outer wall gave way and slid into the river. This will probably settle the fate of the interesting old building, and lead to its demolition, which will, perhaps, be the best end of it, for it has served its purpose well.

RAMIE AS A FOOD FOR SILKWORMS.

It has several times occurred that a manufacturing industry has retrieved its fallen fortunes, or built up yet greater, by finding a use and market for its waste material. In textiles, spun-silk manufacturing furnishes a recent and most notable example, whilst the chemical and colour industries may be said to live almost exclusively upon the utilisation of by-products. The same is the case with the cultivators of raw materials, as for example, cotton planters, who now derive no small portion of their gains from the sale of the cotton seed, which is a valuable oil producer and cattle food. Similar good fortune appears to be in store in connection with the ramie plant, the leaves of which are reported to be excellent food for silkworms. Information on this point has been received at the Foreign Office from Mr. A. de G. de Fonblanque, H. M.'s Consul at New Orleans. A lady in Columbia, S.C., who reared silkworms, being unable to obtain the leaves of the mulberry or Osage orange, made use of the leaves of the ramie plant *(Boehmeria nivea)*, which were eaten ravenously by the worms. When sent to Philadelphia, the cocoons were stated to be larger and the silk finer than was the case with those of worms fed on mulberry and Osage orange leaves. It is added:—"If further experiments should prove that ramie leaves can be depended upon for silkworms' food, then a great impetus will be given to the production of this valuable article in the south, while it will add to the profits of those who raise that plant for its fibre." The ramie plant certainly only awaits the introduction of a suitable decorticating machine to become the object of wide cultivation, and the profitable utilisation of the leaves, as well as the fibre, would prove a considerable additional inducement to its cultivation.

TEXTILE MANUFACTURING IN MEXICO.

Without any qualification, Mexico has been called the country with a great future; but, though that is, perhaps, too positive a prediction, it may certainly, without exaggeration, be described as a country of splendid possibilities. There are many disadvantages to counterbalance the magnificent endowments of Nature. Without mentioning the regular doubt common to minor American Republics, as to whether a political revolution may not be in full fire next month, next week, the day after to-morrow, to-morrow, to-day, *now*, there is the climate to be reckoned with, especially on the coast, a mixed population, and embarrassing national characteristics. There are crude business habits, lack of travelling and transport facilities, in spite of many miles of new railways, and, in consequence, primitive conditions of all kinds to be encountered. A corrupt civil service, and a truly comprehensive tariff—all these, in the old prayer-book phrase, combine to "let and hinder" the advancement of Mexico. But still wealth is increasing and industry extending; and if any of the fibre-cleaning machines which have been or may be invented should prove thoroughly successful, there are textile plants in such abundance, through the length and breadth of the land, that wealth and industry together may have a development which would astonish even this callous nineteenth century, and begin such another change as was wrought by cotton when the last century closed. Agaves, which have furnished fibre for clothing and cordage, and materials for making paper to the aborigines from time immemorial, grow everywhere, and are used to form hedges on the roadsides. Bananas and palms are no less plentiful; plants of the cactus, mallow, and nettle families "grow spontaneously, and attain a prodigious development, presenting various fibres to industry, from those used in the manufacture of the most delicate tissues down to the coarsest and strongest;" and ramie, that hope of many minds, is already cultivated on a considerable scale, and with excellent results. The magic of a successful patent may make these products all valuable, and convert Mexico into a modern Tom Tiddler's ground. So far, however, as manufacturers at present make use of these materials, the greatest progress has been made on regular lines and with staple fibres. Cotton is raised in several States, and is used in 96 Mexican factories to the extent of over 57,000,000 lb. annually (about one-half of which is imported), affording maintenance to more than 50,000 families. A recent report states that the annual production in cottonades, tickings, percales, and calicoes, including fabrics of which no statistics have been furnished, amounts to some 3,800,000 pieces of cottonade, 280,000 pieces of calico and percale, and 2,735,000 skeins of cotton yarn, used by the manufacturers of shawls, spreads, napkins, hose and other goods. Silkworms have also been successfully reared; and as regards wool, there are three factories in the Federal District producing yearly about 162,000 pieces of cloth, three in the State of Mexico producing about 150,000 pieces of cloth and carpet, five in the State of Puebla producing some 550,000 pounds of woollen yarn, which is used in the manufacture of various articles, such as *serapes*, *jorongos*, plaids, and other things, and three in Hidalgo producing 125,000 pieces of cloth. There are several factories, too, in the State of Guanajuats, including one which is not now running, but which used to produce nearly 85,000 *coupons* of casimir and cloth, and about 54,681 yards of carpet.

THE SILVER ACT AND PRICES OF RAW SILK.

The passing of the American Silver Law has naturally furnished an opportunity for much speculation and comment as to the probable effect of the measure upon the prices of raw material, particularly those products which are derived from the East. It is interesting to note, therefore, that in the Lyons silk market during the past three weeks the predominating influence has been the rise in silver, and the consequent advance in the rates of Eastern exchange. This has produced a feeling of great firmness in the raw silk market. The question is now being asked in Lyons whether this rise in exchange will be maintained, and the Asiatic growers be content with lowering their prices in taels and dollars. Even though the rise in Eastern exchange should not prove permanent now that the Silver Bill has been passed, it may be maintained for many months and, perhaps, years. As to the possibility of a depreciation of prices in taels or dollars compensating for the rise in exchange on the markets of the Far East, it is more difficult to gauge the prospects. It is certain, however, that the greater portion of the last crop is in the hands of small growers in the interior, who know very little about, and are inappreciably affected by the great laws of

international commerce, or by the considerations which have to be reckoned with by the merchants of Yokohama and Shanghai, when there is an alteration in the value of silver. These small growers, scattered about in the up-country districts, are affected by one thing only: the price in native currency they receive for their silk. The middlemen selling to the shipping firms can only look forward to concessions after the lapse of a considerable period. The circumstances would have been different if the great Chinese buyers in direct contact with the European markets had had the crop in their own hands at the moment of the rise in exchange. The leading feature just now is undeniably the firmness of the Oriental markets, which uphold European quotations not only for Asiatic supplies but for European growths as well.

RUNNING WITH THE HARE AND HUNTING WITH THE HOUNDS IN THE CARPET TRADE.

It will be perceived from a paragraph which appears under our Kidderminster news this week, that an auction sale of 1,200 pieces of Brussels is to be held in the town next week. Catalogues and invitations have been sent to various wholesale firms in this city, but it is doubtful whether any of our large merchants will attend. The reason is not far to seek. Many Kidderminster manufacturers have been going direct to the retail for some time, although when taxed with it strenuous denials were at first the rule. By-and-bye, however, the tell-tale lists of creditors in the trade gazettes shewed that their denials were insincere. It is only a repetition of the old story about trying to run with the hare and hunt with the hounds. No one has ever succeeded yet in accomplishing the feat successfully, and no one ever will, not even the carpet manufacturers of Kidderminster. Wholesale houses with their vast ramifications and complex machinery, which is kept in a state of the highest perfection, possess facilities for distribution which no individual Kidderminster firm can ever afford to have. These merchants are not likely to allow the facilities at their disposal to be used for the benefit of a few houses in Worcestershire who wish to sell both to the wholesale and the retail in an underhand fashion. The sales referred to, therefore, are now chiefly visited by retailers. Wholesale houses prefer to leave them alone.

EGYPT AS A COTTON FIELD.

The fertility of Egypt is a matter of ancient and proverbial renown. The chief source of its productiveness is the river Nile, whose annual overflowings enrich the land wherever its waters extend. This being the case, there is no reason whatever why the area of fertility should not be greatly increased by an efficient system of irrigation. That this is both possible and comparatively easy of accomplishment there is not only no reason to doubt but abundant reason to believe. What has been already accomplished by the Irrigation Department since the country passed under English control abundantly proves the fact. Mr. C. A. Cookson, our consul at Alexandria, writing under date of June 20th last, says :—

The abundant cotton crop of 1889 came as a welcome relief after the series of bad seasons with which cultivators have had to contend during the last few years. On account of the almost unprecedentedly low Nile flood and the unfavourable weather which prevailed during the growing season such a result was hardly anticipated, and may be regarded as a triumph for the Irrigation Department, whose unceasing watchfulness and careful and systematic distribution of the water supply have converted what promised to be a disastrous season into a fairly prosperous one; for although the crops of cereals, which are produced in districts where the irrigation system is less extensive, were more or less a failure, this was compensated for by the larger yield of cotton. A comparison of the 1889 cotton crop with that of 1878, when similar critical conditions prevailed, strikingly illustrates the progress made in the system of irrigation, the total yield in 1878 only amounting to 1,680,000 cantars, as against 3,250,000 cantars in 1889.

Now if a bad season can thus by such means be converted into a good one, why should not a good one be converted into one still better? We are aware of no reason why a very much larger area of land should not be laid down to cotton, as also to other crops, provided the water supply can be assured, and of that there seems no doubt. With the increasing cultivation of the land the population would increase both in wealth and numbers, and the ancient valley might resume at least a good semblance of its ancient prosperity, if it did not equal or surpass it. With such natural resources only good government is wanted and free scope for the energies of its people. It would result also in its value as a customer annually increasing in an accelerated ratio, while it goes without saying that a government that secured the people such blessings would endear itself to their affections, and would not readily be displaced by any competitors for the position, whatever might be their alleged interests in the land. We trust that the country will support an enlightened administration of the government and resources of Egypt, so as to bring these things to pass within a measurable time.

Articles.

THE NEW LABOUR MOVEMENT, AND WHAT ITS LEADERS ARE TEACHING.

The introduction of socialistic principles into English trades-unionism has completely transformed the character of the latter as far as the admixture has taken place. It is now unrecognisable in its objects, aims, and the means it is using to attain them when compared with the trades-unionism of only ten or fifteen years ago. Then labour recognised that it had its duties as well as rights, and when the former were admitted it shewed no disposition to shirk the latter. What it desired and sought to obtain was "a fair day's wage for a fair day's work," not envying capital an occasional good time in return for the latter's assumption of all the risks of production and distribution. Now, however, capital under the new *régime* is declared to have no rights, but only an enormous amount of obligations. Its duty is to find work for the labourer, to pay him the highest wages for the least and most inefficient services. However defective may be his work, and to whatever extent he may have rendered the material entrusted to him unsaleable, he must be subject to no abatement of his wages, as, notwithstanding any contract between him and his employer, the Union with which he is connected has made a rule that its members must be paid in full and subject to no deductions whatever. If, in order to preserve discipline, an employer resorts to the alternative of dismissing a workman member of the Union under such circumstances, the remainder of the Union members of his staff of workpeople must be "brought out" until the worthless fellow's re-engagement is enforced. If the employer endeavours to obtain other help the new comers are waylaid, intimidated, or bribed away from his service. Beyond this, it is now seriously proposed that non-unionists shall not work with unionists, and indeed, shall not, if they can help it, work at all. But this proposal does not even stop here. Mr. Burns, the London demagogue, proposes that the Dock Labourers' Union shall just take in the number of members that in their opinion are adequate to do the work of discharging the shipping of the port of London, and that none others shall have the chance of obtaining a day's employment, and this notwithstanding the half casual nature of the employment offered by the occupation of the docker. In our large industries from the force of circumstances it is a common occurrence that the son follows the occupation of the father, the son of a winder becomes a winder, the son of a weaver becomes a weaver also, and so on through all the occupations, even to that of a docker Thus the resolution which this new leader of working men advocates will shut the door of employment against their own children. If other societies do likewise, which we suppose they will be told will be the best thing for them to do, what will become of the unemployed, who find every door closed against them? Remember they are the sons and daughters of working men, as it is from these classes the increment to our population mainly arises. "Oh!" says this sapient political philosopher, "Society must hold itself responsible for the flotsam and jetsam. . . . The men who cannot get work at the docks must be thrown upon the poor law, or relief works."

We have at present neither time nor opportunity to comment upon these manifestations of the new lines upon which the trades-unions of to-day are being now and will be henceforward conducted. Lest, however, some of our readers should think that in the above rough summary we have exaggerated the facts, we append the following cuttings from reports of speeches in the newspaper within the past few days. Never a week passes without a crop of similar utterances, and it will be well if the capitalists and employers of the country will take note of the fact.

The Trades Union Congress holds its sittings in Liverpool during the coming week, and it will be instructive to read the reports of its proceedings; and if we mistake not it will be edifying as well to capitalists and employers. Referring to

THE OLD AND THE NEW TRADES-UNIONISM,

we cull the following from a speech of Mr. John Burns, addressed to a large meeting of workmen outside Price's Patent Candle Factory, Battersea, which was convened to support the newly-formed Factory Operatives' and General Labourers' Union. We quote from the *Times* of Tuesday last. Mr. Burns said :—

Some of them would doubtless like to hear something about the Trade Union Congress which was to be held next week at Liverpool. When he used to stand and speak a few years ago at the Battersea-park gates, some of the members of his own trade society—the Amalgamated Society of Engineers—wanted to turn him out because he was regarded as "too extreme" and "too advanced." What did he do? He stuck to his union and did his best to educate its members. Now they had chosen Tom Mann and himself as delegates to represent them at the coming Trade Union Congress, to represent 65,000 skilled artisans and a union which had enrolled 9,000 additional members during the last twelve months. At that congress the old unions, or some of them, would be represented by younger, abler, and more progressive men than had hitherto represented them. He believed that at the forthcoming congress many of the useless fossils and reactionaries who had held the office of general secretary to their respective unions and had used their position to chloroform the members, had used their official position simply as a means of drawing an annuity of £200 or £300 for their

services and neglected the wages and hours of the rank and file of the unions—these men, he believed, would have to take a back seat. They would, he thought, be told in unmistakable language that the time had gone by when trade-unionism could sit on the fence as it had previously done, and that trade-unions in the future must be less rate-reducing societies for the middle and upper classes, must be less of sick and burial societies, and less societies for providing for a man's widow when he was dead. (Cheers.) They must, by securing the worker better wages and a higher and more comfortable standard of life, enable him to live longer—to prevent his dying so young. (Hear, hear.) They must get him a reduction of hours and higher wages, which would, in all likelihood, prevent his going to his grave prematurely. (Cheers.) The old trade-unions should have done this, and they would have done it if they had acted up to their best traditions, and put forth their fighting power instead of allowing themselves to be dodged, chloroformed, and hocussed by party politicians for dirty political party purposes. (Cheers.)

Of course, sentiments like these were cheered to the echo.

WHAT THE NEW TRADES-UNIONISM PROPOSES TO DO.

Continuing his observations in the same speech, Mr. Burns said :—

At the coming congress there would be discussed the ordinary questions, such as the Employers' Liability Bill, and he hoped that that measure would be passed in the next Session of Parliament with the contracting-out clause completely eliminated. (Hear, hear.) He hoped that the sum which a man was entitled to receive would be raised from £200 to at least £500. (Hear, hear.) They did not want an Employers' Liability Act to give sums of money to the relatives of men who were killed or to men who were seriously injured. They required an Employers' Liability Act which would be so full of penalties, so full of restrictions and punishments, as to make it impossible for employers to have their machinery in such a condition that the men would be hurt, injured, or killed at all. (Cheers.) Besides the Employers' Liability Act they wanted an extension of the Factory Acts, an improvement in the Mines Regulation Act, and increased sanitary and factory inspection. And, above all, they required to know what part, what power and influence, the weapon known as the boycott would have to play in future labour struggles. Throughout Great Britain and the whole of the working-class world the weapon called the boycott was a most formidable weapon indeed. Another question he hoped would be discussed at the congress was the organisation of all the agricultural labourers of Great Britain. (Hear, hear.) Thousands of landlords were immensely rich, drove their four-in-hand, kept hunters, had town and country houses, lived lives of luxury and, in many cases, of riotous debauchery, at the expense of the workers, while the agricultural labourers on their estates in Wiltshire, Dorsetshire, and other countries were earning only a beggarly pittance of 10s., 11s., and 12s. for a week of 80 or 90 working hours. ("Shame.") It was the duty of the town artisans in their own interests to pin those labourers to the soil by making their labour attractive, by so organising the agricultural labourer that he would be kept on the land by the inducement of higher wages than he now received and shorter hours than he now worked, and generally better and more considerate treatment. (Cheers.) If they did this, not only would they be conferring a boon on agricultural labour, but town artisans would raise their own wages by cutting off the source whence the labour market in towns became overstocked—(hear, hear)—and caused wages to diminish in consequence. Equally as important and necessary as the organisation of agricultural labourers was the organisation of the women, girl, and child labour of the big towns.

Of course the capitalist is a great ogre who has subsisted upon poor town and country labourers until he has grown so obese that he can hardly move, and he must now be made to pay higher wages for less labour in every sphere of industry. His exchequer is exhaustless. The labourers have only to ask and have. Machinery must all be recast, and so constructed that it will be impossible for these sugar-candy, gilt-gingerbread workmen to harm themselves; whilst if in spite of every precaution they succeed in doing so, they must be able to claim at least £500. We suspect that if the morals prevailing amongst some of these new leaders pervade the masses to whom they are addressing such language to any extent, they would be putting their fingers in the wheels frequently that the coffers of the Bank of England would not suffice to meet the claims that would be made.

MONOPOLIST WORKMEN.

It has often been affirmed that there is no tyrant of the working man so great as his fellow worker. Mr. Burns, speaking on Sunday to a meeting of working men, dealt at some length with the action of the Dock Labourers' Union in limiting the number of their members.

The newspapers, he said, had been denouncing the docker for closing the membership of his union, but those journals said nothing about the close corporations of the legal and medical professions. They had decided to have only sufficient men in the union to do the required work. They were not willing that the wages of 24,000 men should be reduced to a lower than the existing standard, and to suffer the docks of London to be made cesspools for the reception of all the loafers, criminals, and ne'er-do-wells who were desirous, not of doing an honest day's work, but simply earning sufficient to enable them to have an occasional booze. (Cheers.) Every available man had joined the union. They had had twelve months' notice to do so, and now that the number was adequate for the work to be done, the union was about to close its books, and it would be no injustice to future applicants if they saw written upon the gates of London docks "No hands wanted." But some would say, what were the poor labourers who were not needed to do? Society must hold itself responsible for that flotsam and jetsam. Society had no right by working men long hours, by introducing labour-saving machinery, and by creating a loafer, criminal, and degraded class—society had no right to bring about such evils without finding the remedies. The men who could not get work at the docks must be thrown upon the poor law or relief works. If that would not solve the problem, then the upper and middle classes must adopt as soon as possible an eight hours' working day by Act of Parliament, which he believed would be the means of the absorption into the ranks of remunerative industry of the loafers and idle to whom he referred. (Cheers.)

BOYCOTTING.

As will be seen from an extract given above, boycotting is a perfectly proper and legitimate act when committed by a trades-unionist, but if the employer accepts the position and endeavours to provide himself with other workers and to defend them from attack, it is an outrage upon the rights and liberties of the new trades-unionists by the employers. We will leave Mr. Burns to say what shall be done unto them. Speaking at a meeting on Tower Hill, also on Sunday, convened by the Dock Labourers' Union, Mr. Burns said :—

They heard rumours of a Shipowners' Union in the port of London, with a capital of eighty millions, with the object of smashing up the Dockers' Union. If the capitalists of the Shippers' Union thought they were going to clog London with "blacklegs," by God they would have a warm time. These gentlemen said that if the tyranny of the unions was to be continued they would organise groups of police in the name of the law, who were known in America as the "Pinkerton gang." On behalf of the dockers, not only of London, but of the United Kingdom, he said that the first gang of "Pinkerton's" which came into force in this country would have their hair lifted in less than 24 hours. Fancy gangs of police walking about the East End of London armed with bludgeons and revolvers! If the capitalists thought they were going to have a "Pinkerton" gang in this country it would be bludgeon to bludgeon. At the forthcoming conference the dockers' officials would discuss a new method of working ships. New schemes, embracing profit sharing, gave the masters an opportunity of undermining the union. He had, however, confidence in the officials that they would not put their necks in a noose.

Our space is quite exhausted, but not our matter. We could fill another page with such expressions and teachings as these. It must not be supposed because we have drawn solely from Mr. Burns' utterances, that the textile trades are free from similar pernicious teachings, as it was our intention to have shewn—an intention which we may shortly have an opportunity of carrying into effect.

Letters from our Readers.

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

THE DANGEROUS ELEMENT IN STRIKES.

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

Sir,—It has been often said that it is a defect in our national character that we are slow to realise the importance of taking action in good time whether in war or peace. We are dilatory at the outset of new events, and have had frequently to pay for our unreadiness. Now a grave social danger threatens, which, though not very formidable at present, may easily become so if not promptly dealt with. That danger must have been apparent to many keen observers of the strikes last year, and still more so to those who are watching the present course of events. Strikers are gradually adopting the totally indefensible line of action, both legally and morally, of absolutely preventing fresh hands (called by them "blacklegs") from filling the places they have vacated. It needs little penetration to see that this tyranny, if once allowed to be generally established, must end in the ruin, first, of the employers, and, secondly, in that of the trade of the country. If a set of men, knowing that their employers can get no others in their places, combine in the most preposterous demands and refuse to work till they are granted, they bring to bear a coercion on the said employers which would be very soon intolerable. The results every one can easily imagine. Trade would be driven out of the country and pass into the hands of the foreigner even more than it has already.

It is absolutely essential that a firm stand should be made before it is too late against this odious tyranny. Men must be taught that, though they have every right to strike themselves, they have not the least atom of right to prevent other men from accepting the labour they have thrown up. The contract of labour must be kept absolutely free; it is the right of every worker that it should be so. The law and the rights of strikes should be widely proclaimed by Government, for many of the strikers are entirely in the hands of the professional agitators, and really are not aware of the gross injustice and illegality that attend so many of their proceedings.—Yours faithfully,

Magistrate.

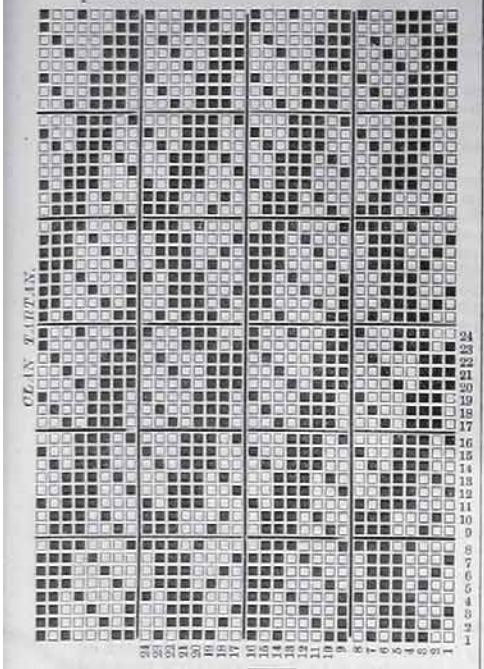
Designing.

NEW DESIGNS.

A CLAN TARTAN.

There is every prospect that the clan tartans will become fashionable for winter wear; in fact they are at present inquired about. We therefore purpose to give from time to time a few designs in this class of goods that are likely to become prominent. The one given herewith is the McDonnell of McDonnell (Glengarry): On 6 shafts, straight over draft, 6 to the round, three up and three down, for 6 treads warp and weft pattern; 8 red, 20 bluish green, 4 red, 20 black, 20 green, 8 red, 4 green, 4 red, 8 green, 4 white, 8 green, 4 red, 4 green, 8 red, 20 green, 20 black, 4 red, 20 blue, 8 red, 24 light or sky blue; total, 220 ends complete pattern. Reed 80 ends per inch, and 80 picks of 30's cotton for warp and weft. A heavier but coarser cloth may be obtained from 20's weft and warp in a 60 reed, two in a dent, or 60 ends on one inch, and 60 picks; of course different counts of reeds warp and weft, can be used. We have only given the

above particulars as a basis for cotton, but no doubt wool, worsted, silk, and linen will also be used in the production of these beautiful patterns.

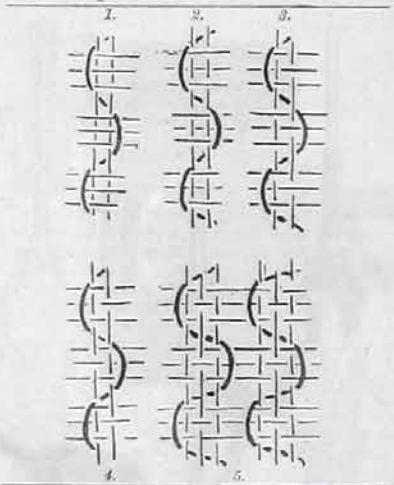


GAUZE FABRICS (*Continued*).

Before continuing our remarks on *Figure C*, given in our last issue, we would just point out to our readers who have failed to find coincidence of pegging plan, draft, etc., that inadverdently *Figure A* has been printed wrong side up, and *Figure B* has been placed in such a position that weft takes the place of warp, and *vice versâ*. We trust that with these corrections the true relationship of fully-sketched pattern, douping plan, plan, and pegging plan will be fully realized.

Proceeding to the consideration of *Figure C* (which we reproduce for convenience) the structure of the central gauze effect first claims consideration. Notice first that there are two stationary threads, round which the doup thread passes. Then notice that though the picks leave the plain gauze in series of fives, this order is completely broken up in the principal gauze effect in which repetition occurs at the twentieth pick; thus it is very evident that to a very considerable extent the picks and threads in a gauze pattern may be made to open out, leaving almost a clear space, or to close up, forming a compact cloth, giving, as demonstrated in *Figure C*, patterns which in effect almost equal embroidery. The sketch is not exactly true, some little divergence of the weft picks occurring, as shewn at the top of the sketch, the reasons for which shall now claim attention.

The essential condition for the production of a gauze effect is that the crossing thread should pass *over* a pick first at one side of the stationary threads and then at the other. No crossing can be formed unless this condition be observed, for if the crossing thread be only lifted at one side of the stationary threads it is bound to continue its course through the cloth as an attachment to that particular side, *unless lifted over a pick* on the opposite side. Having, then, decided that for the production of gauze, a lift on first one side and then on the other side is essential, we may now give attention to the grouping of the picks, when it is at once evident that this depends wholly on the action of the doup thread. We have prepared five sketches, 1, 2, 3, 4, and 5, to illustrate this. In 1 we have two stationary threads with the doup changing position every three picks. Now, the effect of this arrangement would be to press all three threads together; thus most of the doup thread would be seen on the opposite side of the fabric to that sketched. In *Figure 2* more stability is given to the three picks by causing them to interweave with the stationary threads. Also observe that here we have paid particular attention to the conditions for producing a perfect gauze, viz., the outside picks of each three pass over the stationary threads. But then we see that if this condition be observed the centre pick never rises, and thus never interweaves at all. In order to remedy this defect, make one of the stationary threads interweave exactly the opposite to the other. *Figure 3* is constructed on this principle. On examination, however, it is found that though in one case, viz., the left hand side, the crossing is as neat as possible, in the other case this state of perfection is not maintained, since, instead of the uppermost pick of the last three coming *over* the stationary thread prior to passing under the doup thread, it passes *under* the stationary threads, thus creating a defect. Such a defect is, however, absent in *Figure 4*, where the two stationary threads are worked perfectly plain, irrespective of the divisions of three picks which it will be observed have been taken as repeats in *Figures 2* and *3*, where the stationary threads repeat their manner of working every three picks, thus not interweaving perfectly plain. In *Figure 5* the construction of gauze with the doup thread crossing three stationary threads is demonstrated. Here the two outside stationary threads work plain and oppose the centre thread, thus forming a firm structure.



Returning now to the pattern under consideration (*Figure C*), it will be seen on examination that the crossing thread passes over three picks on the left-hand side of the stationary threads, thus isolating these three picks from their companions. Then the crossing takes place, and the count thread is worked for 17 picks on the right-hand side of the stationary threads, thus tending to bring these 17 picks together, leaving a space between them and the other three, which is taken advantage of for the formation of the ogee figure. The construction of the pattern will be now readily grasped, so that we may now briefly call attention to the healding plan. It is evident at first glance that more than one doup will be required, since the two centre doup threads are working the same figure as the doup threads on either side on quite a different lot of picks. Thus, two doups and two shafts to work in combination with the doups will be requisite for the formation of the centre gauze portion of *Figure C*. Then again, there are four other crossing threads of finer yarn, which edge this stripe and mark it off from plain. To work these another doup and shaft will be required, which we have not indicated in the healding plan, since what we especially wished to demonstrate was the formation of the principal gauze stripe, and the introduction of this third doup and shaft would possibly lead to confusion.

In comparing the pegging plan and healding plan note that the directions of the hand and arrow indicate the direction in which the pegging plan acts upon the healds.

If reference be made to the issue of this journal for August 2nd, *Figure 24* will be found to illustrate the remarks made above.

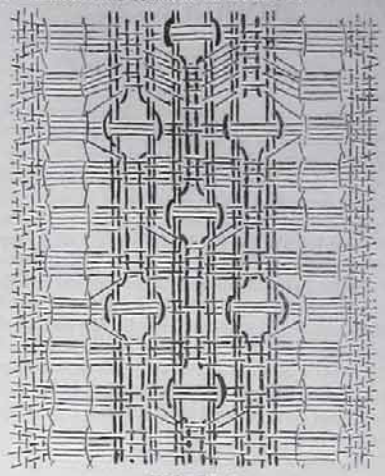


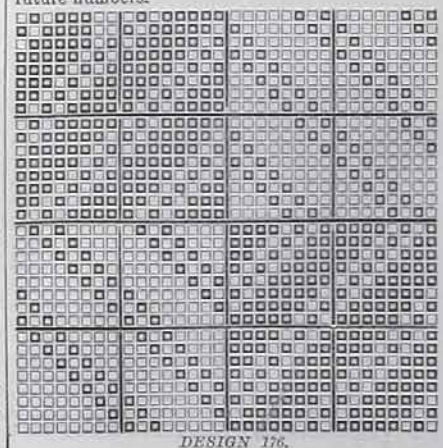
FIGURE C.

DEVELOPMENT OF *FIGURE C*.

As this pattern evidently owes its beauty to the arrangement of yarns, etc., special attention should be given to our remarks on the subject. Since this pattern is to represent embroidery, as nearly as possible, all the stationary threads in the principal gauze stripe must be much thicker than the picks and those threads that form plain. Then, since the crossing thread here plays a prominent part, it is advisable to have it much thicker than the stationary threads, so that these latter threads will seem to form a ground on which the thick crossing threads partake of a definite figure. We need scarcely say that the introduction of coloured threads, particularly of light tint, or of silk or worsted threads, will yield exceedingly beautiful effects.

WOOLLEN MANTLE CLOTH.

Mantle and dress cloths constructed on the principle indicated in *Design 176*, yield some exceedingly good effects. To begin with, this check may be increased almost indefinitely in size without any additional shafts. Then fancy threads, either in colour or construction, should be inserted to demark the cuts, which it should be observed in this pattern are perfect. Probably the best effect will be obtained by using two neutral mixture yarns, one for warp and the other for weft, and then introducing single threads of stronger colours similar either to warp or weft, or both. Respecting the setting, the intersections are equivalent to the 2 and 2 twill, but a more open set than that usually used for this latter twill, will yield more pleasing results. The more complicated types of this class of design shall claim our attention in future numbers.



DESIGN 176.

Machinery and Appliances.

THE "BATES" SPINDLE.

In *The Textile Mercury* of March 1st last, there appeared a short description of this new spindle, extracted from an American contemporary, to which we appended an editorial note asking for some specific data as to speeds, etc. In response to this request, Mr. Stockton Bates, of Philadelphia, has kindly forwarded us a copy of a report just made by a sub-committee of the Franklin Institute, awarding him for the invention of the spindle, the Elliott Cresson Gold Medal, and giving in an appendix the results of tests made by Mr. Samuel Webber, author of "Webber's Manual of Power." We accordingly print below the report and appendix, which will doubtless be of interest to many of our English readers.

ON STOCKTON BATES' SUPPORT FOR SPINNING SPINDLES.
(Report of the Committee on Science and the Arts.)

[No. 1,554.] Hall of the Franklin Institute, Philadelphia, June 28, 1890.

The Sub-Committee of the Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania, to whom was referred for examination,

STOCKTON BATES' PATENTED SUPPORT FOR SPINNING SPINDLES,

respectfully report that:

They have carefully examined the same and investigated the state of art under which the invention was made, and find as follows:—

That the invention is the subject of Letters-Patent of the United States, No. 416,286 and No. 416,287, both dated Dec. 3rd, 1889, and granted to Stockton Bates, Edwin F. Shaw, and George M. Von Cunlin.

That its purpose is to furnish a better support in which spinning spindles revolve, and whilst supporting the spindle, so as to diminish and avoid the inaccuracies in the rotation due to the springing from unequal tension of the driving bands, to also furnish more durable wearing surfaces, easily and cheaply replaced when worn, and to provide an efficient means of constant lubrication and exclusion of foreign substances from the wearing surfaces. In addition to these features, the bearings, by reason of their construction, require less framing to support them and are entirely self-contained, and hold their several parts in correct relative position to each other, irrespective of any changes which may occur in the shape of the supporting frame of the machine.

In order that the features of importance and value in this invention may be more clearly understood, your Committee deem it expedient to briefly describe how such spindles were heretofore supported in pre-existing machines for the same purpose,* and also to shew the beneficial effects which may reasonably be expected from their introduction into use.

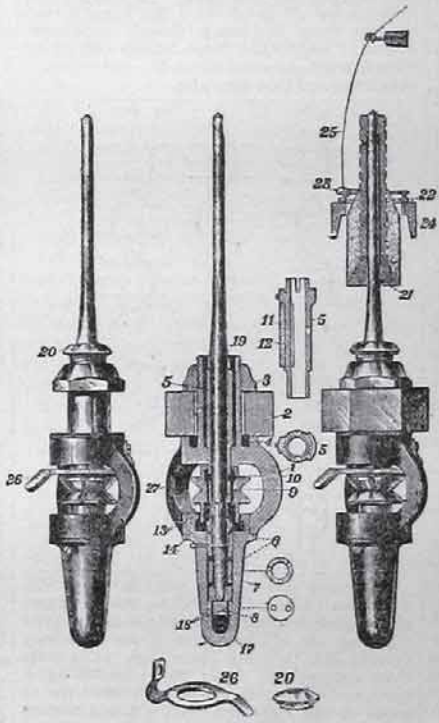
The functions of spinning spindles are twofold. They twist a filament or sliver of roving or carded cotton, which has been stretched out, but not yet twisted, and wind it upon a tube placed upon the spindle, forming what is known as a cop.

In the spinning of yarn, as practised in olden times in every household, the spindle revolved with the flyer or frame, bearing hooks, over one of which the yarn passed to the spool on the spindle, turned with a slightly greater velocity, and this difference produced the winding effect.

In the ordinary spinning wheel the spindle was horizontal, and supported in bearings at each end; the speed attainable by foot-power was limited and never brought out any test of the durability and capacity for work which developed in manufactures as conducted by water and steam-power.

In machine spinning, on the other hand, the spindles are vertical or nearly so.

Power spinning machines may be classified as follows: Throstle spinning, which resembles the method of the spinning wheel, using a flyer and bobbin; mule spinning, in which a certain length of sliver is paid out by rollers, and stretched and spun, and then wound upon the bobbins; and ring spinning, in which a spindle, revolving rapidly, turns a bobbin with it, inside of a ring having a rim or lip, around which a small loop of metal called a traveller turns, and guides the yarn, as it is twisted, from a sliver of roving, which is steadily stretched and paid out by a series of rollers in the upper part of the machine. The frictional resistance of the traveller upon the ring causes it to turn more slowly than the spindle and bobbin, and as a consequence the yarn winds on the bobbin. The rate of winding is regulated by the weight or size of the traveller. The ring and traveller have a slow up-and-down motion during this operation which causes the yarn to wind evenly on the bobbin. The spindle and bobbin must be concentric with the ring or else a tightening and loosening effect is produced at every revolution, which prevents the equal twisting of the yarn and uniform winding of the cop.



THE "BATES" SPINDLE.

1, Upper section.	*14, Lower rim of whirl.*
2, Bolster-rail.	*15, Oil-channels.*
3, Nut.	*16, Oil-channels.*
4, Oil-receptacle.	*17, Waste-oil cavity.*
5, Upper-bearing.	*18, Holes in bearing 8.*
6, Lower section.	*19, Spindle.*
7, Lower bearing.	*20, Cap.*
8, End bearing.	*21, Cop tube.*
9, Whirl.	*22, Ring.*
10, Chamber in whirl.	*23, Traveller.*
11, Steel plate in bearing.	*24, Ring rail.*
12, Wood strip under 11.	*25, Roving.*
13, Apertures in whirl.	*26, Spring.*

The practice which has prevailed in making and supporting machine spinning spindles, has been to rest the lower end in a step set in a rail, and with a journal above fitting through another rail, known as a bolster rail; rotary motion is imparted to the spindle by a grooved pulley or whirl, turned by an endless band. In ring spinning frames the rings are in another rail, which works slowly up and down in suitable guides, so as to wind the yarn evenly in the cops.

It is obvious that any warping or springing of either of the rails must impair the alignment of the bearings of the spindles, and such impairment of position of the bearings increases the friction, and retards the motion and causes both a diminished quantity and poorer quality of product. Such bearings are exposed to dust and require frequent lubrication.

The invention under consideration is designed to avoid the possibility of such defects and as hereinbefore stated, to secure perfect cleanliness and automatic lubrication, besides facility of adjustment and repair. *(See illustration.)*

The Bates' spindle support consists of an upper section *(1)*, which fits from below through an opening in the single rail *(2)* of the machine frame, resting with a shoulder against the under side of the rail, being drawn up and held in position by a nut *(3)* upon the upper part. An oil receptacle *(4)* is formed around the central portion of the upper part of the bearing, within the shoulder, which receives an absorbent packing, and is in fluid communication with an oil-space in the central cavity, containing the upper bush or bearing *(5)*. A lower section *(6)* is screwed into the bottom of the upper section, containing the lower bush or bearing *(7)* and the bottom or end-bearing *(8)* and an oil receptacle. In the upper section *(1)*, which is bored out concentrically with the screw and shoulder already referred to, is inserted the upper bushing or sleeve *(5)*, extending downwardly into a chamber *(10)* formed in the upper side of the whirl *(9)*. A steel plate *(11)* is inserted in the bushing *(5)* on the side receiving the draft of the driving-band, with a wooden strip *(12)* laid under it. The whirl *(9)* has apertures *(13)* made through it, reaching from the upper cavity *(10)* into the lower cavity, through which oil can descend, but cannot be whirled off by reason of the lower rim *(14)* of the whirl extending into a chamber formed in the lower part of the support. A bushing *(7)* removably fitted into the lower part of the support, serves to centre the lower end and a hardened steel plate *(8)*, beneath the spindle, supports the weight. The bushings *(5)* and *(7)*, which form the bearings, are not made with continuous outer surfaces to fit in the casing portions of the support, but are fluted or grooved so as to provide oil-channels *(15)* and *(16)* and chambers between the bushing and the casings.

Below the hardened steel bearing *(8)* there is a cavity *(17)*, into which any foreign substances in the oil can subside without injury to the bearing. A cap *(20)*, fitted loosely around the spindle *(19)* at the top of the bearing *(1)* serves to exclude dust, and is easily raised by the spout of the oiler. An oil-chamber *(4)* is formed around the bearing, which being filled with an absorbent, saturated with oil, insures continuous lubrication for a long time.

The portion of the bearing surrounding the whirl is formed with curved pillars and intervening open spaces so as to permit easy access to the whirl for the driving-band, and to afford opportunity for inspection.

An elastic plate of metal *(26)*, secured by a screw to the upper part of the bearing at the rear, and extending across the upper surface of the whirl, with a projecting ear at the front, acts as a brake when pressed against the whirl, so that the motion of any spindle can be arrested without affecting that of any other.

It will be seen upon inspection that the spindle is supported through a large portion of its length, down to the portion which the driving band strains upon the whirl, and cannot therefore be sprung or vibrated by the band. The oil is guided steadily from the top to the bottom of the bearing, as the oil chambers are sufficient in size to retain oil for several weeks' running. As a matter of fact, these spindles have been run for six weeks at full speed with only one oiling, as a test, lagging only during the last week. It is found to be safe practice to oil them once per fortnight. Ordinary spindles require oiling at least every two days, usually daily and even oftener.

The bushings in the upper and lower parts of the bearings are easily removed and replaced, and being finished with their internal and ex-

* These introductory statements are not altogether correct. —ED. *T.M.*

ternal surfaces concentric, they cannot be wrongly adjusted. From their form they are cheaply made accurately interchangeable, so that once fitted with these bearings, a spinning frame can, at low cost, be kept in best efficiency for an unlimited time. When once adjusted concentrically with the rings of the spinning frame, all parts, except the upper shell and nut, may be removed without impairing the adjustment and the bearing may be replaced without interrupting the work of contiguous spindles.

The spindle is so well supported in these bearings as to be incapable of vibration, and once set true with the ring in which it works, it continues to work true.

The speed to which these spindles can be run without heating is far beyond the limit imposed by the properties of the staple to be spun. This, it seems, leaves nothing further to be desired in respect of speed. All portions of this spindle-support are made to fit concentrically and exact alignment is thus enforced. The finishing of the parts is entirely within the capacity of turret lathes, and can, therefore, be made at low cost, and the parts subject to wear, to wit, the bushings, involve very little material and are easily fitted or finished at slight cost.

Your Sub-Committee have examined many other spindle supports and spindles, and have found nothing comparable with the construction exhibited in the Bates spindle. The proportions and combinations of its several parts are so well arranged, that in repeated trials, a spindle weighing about four ounces was kept running for a period of three weeks, or 180 hours, at 12,000 revolutions per minute, without heating the bearings, with no perceptible vibration, and with only the oil supplied at the outset. Appended to this report is a statement of trials and observations made by Mr. S. Webber, which, while not entirely satisfactory for reasons which Mr. Webber has been careful to explain in his postscript, are of interest to those familiar with such manufactures, as indicating that not only can improved quality of product, with less waste of material, and greater capacity of machine with the same labour, be procured, but that an economy of driving power should result from the use of the invention.

The invention, as observed at work by your committee, appears to be simple and effective, of great durability, of easy adjustment, susceptible of renewal of all the wearing parts in each spindle without the trouble of readjustment, and without involving any suspension of the work of other parts of the machine, and for this reason, together with the high speed at which it can safely be run, the invention increases the capacity of the machinery to the limit imposed by the properties of the staple. Furthermore, it secures such a uniform spinning and winding by reason of its accuracy of motion, that the best possible quality of product from the material results, as well as the greatest quantity in a given time, without requiring any additional labour. Thus the invention economises cost of production, and since the advantages for such reduced cost for labour in proportion to the product, and such improvement in product, are followed by better weaving and better quality of cloth, with diminished cost, the invention may be fairly considered as a most valuable accession to the comfort of mankind in their second great want—*clothing*—food only taking precedence. In view of these facts, the award of the Elliott Cresson Medal appears to be merited.

[Signed] Francis LeClere (Chairman), Philip H. Fowler, Luther L. Cheney, John Hall, S. Lloyd Wiegand, Stanley Lees, W. Barnet LeVan, Samuel Webber. Adopted, June 20th, 1890. [Signed] Geo. A. Koenig, Chairman *pro tem.*, Com. Science and the Arts.

APPENDIX.

TO REPORT OF SUB-COMMITTEE NO. 1,554: COMPRISING THE RECORD OF THE TESTS OF THE BATES SPINDLE, MADE BY MR. SAMUEL WEBBER.

Philadelphia, March 16, 1890

Messrs. Leclere, Fowler, Cheney, LeVan, Lees, Bilgram, Hall, and Wiegand, Committee Franklin Institute.

Gentlemen:—I have carefully attended to the duty to which you have assigned me, to test the "Bates spindle," and beg leave to submit to you the following report: I must first premise that the spindles are too new to be fairly tested, having run only about three months, while my experience has taught me that it takes at least six months to wear a spindle, as it usually leaves the shop, to its proper bearings. In proof of this I would refer you to the tests of a Bridesburg frame of Excelsior spindles at the Stark Mills in Manchester, N. H., in 1875, as follows:

The frame of 204 spindles then about three months old, the spindle weighing about eight and one-half ounces, at 4,785 revolutions per minute with a two-inch ring, required in August 7·38 foot-pounds per spindle, or at the rate of seventy-four and one-half spindles per horse-power.

The same frame repeated in November at 4,930 revolutions per minute took 6·54 foot-pounds per spindle, or eighty-four spindles per horse-power. The record of these tests will be found on pp. 70 and 71 of the *Manual of Power*, published by me in 1879, as well as other notes shewing the difference due to the tension of the bands.

In the first frame tested of the Bates' spindle, at Callaghan's mills, at Angora, on Thursday, March 13th, 1890, this tightness of fit was very evident, as several of the spindles heated sufficiently in their bearings to warm the bolster rail perceptibly, while the Whitin spindle, which had been running three years, ran perfectly cool, both on No. 30 yarn. I will, however, report the test, as follows, with two frames of 204 spindles each:—

	Bates Spindle.	*Whitin Spindle.*
Revolutions of front roll, counted	100	100
Revolutions of spindles, calculated	8,360	8,160
Average power in foot-pounds per spindle	8·11	5·50
Average number spindles per horse-power	67·4	100
Average horse-power per frame	3·144	2·219

The tests were made with both full and empty bobbins and averaged, but the total difference between full and empty bobbins was only 129·5 foot-pounds for the frame of Bates spindles, while it was 180 foot-pounds with the frame of Whitin spindles, shewing steadier motion for the former. The test of the Whitin spindle almost precisely duplicated similar tests at the mills at Manchaug, Mass., in September, 1887, at nearly the same velocity on nearly the same number of yarn, and in both cases the frames were in the best running order. On Monday, March 17th, a similar set of tests was made at the Gloucester Gingham Mills, Gloucester, N.J., the comparison being made between the Bates' spindle and the Excelsior spindle, both built by the Bridesburg Manufacturing Company. Here, as before, the Bates' spindle had been running only about three months, while the Excelsior had been running since July 1881.

These frames were both running on No. 26 yarn, and the tests shew as follows:

	Bates' Sp.	Excelsior.
Revolutions of front roll, counted	102	107
Revolutions of spindle, calculated	8,039	8,430
Foot-pounds per spindle, bobbins half-full	7·35	6·89
Spindles per horse-power, bobbins half-full	75	80
Horse-power per frame, bobbins half-full	2·737	2·554
Rolls disconnected, H.P. for rolls only	·462	·491
Rolls disconnected, spindles and cylinder	2·264	2·064
Rolls disconnected, cylinder only	·462	·462
Rolls disconnected, spindles only	1·802	1·70
Spindles, per horse-power, spindles only	113	120

I have no tests of the Excelsior spindle on the same number of yarn and at the same speed, for comparison, but so far as I can compare them I see no great variation from those I have previously made.

Referring to what I have previously said, I see no reason to doubt that, after three or four months' operation, the Bates' spindle will run with as little power as the Excelsior, and, perhaps as the Whitin, which is, so far, the lightest spindle I have ever tested.

One or two slight mechanical changes, which Mr. Bates has in mind—such as reducing superfluous bearing surfaces, etc.—will, I think, accomplish this end, without detracting from the simplicity and accessibility of this spindle, which I consider its great merit.

Respectfully submitted.

Samuel Webber.

P.S.—I find, in looking over the above, that I have omitted another very important point, viz., that the pulleys on both frames with the Bates spindle were so small (being only seven and eight inches diameter, respectively), that a tighter belt was required to drive the frames up to speed than was necessary for the frame with the Whitin and Excelsior spindles (both of which had 10-inch pulleys), and this very difference would easily make 5 per cent. addition to the power consumed. S. Webber.

*SMOKE ABATEMENT APPLIANCES.**

By Dr. S. Barwise, Blackburn.

The time is come when I think we can, with great advantage, review the progress that has been made in the means of abating the nuisance caused by smoke, and consider the reasons for the complete failure (except as regards the Metropolis and, perhaps, Nottingham) of the legislation on this subject.

The agitation against smoke started in the year 1306, when, in response to a petition from Parliament, Edward I. by proclamation "prohibyted the burneing of sea-coale in London and its suburbs, to avoid the sulphurous smoke," and commanded all persons to make their fires of wood. That the anti-smoke movement after nearly 600 years has not yet attained its object is evident to sight, taste, smell, and touch, in any manufacturing town on working days. Manifestly either means of abating the nuisance have not been discovered, or our legal procedure is at fault.

A glance at any manufacturing town on a Sunday, and again on a working day, proves at once that the smoke cloud does not come from the dwelling-houses; and in this paper I am dealing only with manufacturing smoke especially that from large horizontal boilers.

Smoke arises from a furnace both when the supply of air admitted is inadequate for the complete combustion of the fuel, and when a sufficiently high temperature to effect combustion is not maintained, this being frequently the result of endeavours to prevent smoke by admitting an excess of cold air.

I have tabulated the various methods of dealing with the problem, and the latter is the reason for the failure of many of them, especially of varieties of split bridge.

Contrivances for admitting air, either heated or cold, by steam injectors, fans, by special tubes through the flue, through the fire, through hollow bars, and so on, to various parts of the boiler, have been invented and patented a thousand times. This is a matter worth insisting upon, because someone is always making himself a nuisance by claiming to have solved the smoke problem, and inflicting upon an already surfeited public methods that have been known for many years. I have only tabulated a few of the methods, which may be regarded as types of the rest.

With regard to split bridges, one which works admirably is that of Roscow, of Bolton, and well illustrates the necessity for a split bridge being provided with a movable door. In this apparatus the door is supposed to be kept closed. The result is that the bridge gets white hot. After firing, a cloud of dense smoke appears, but if the door be opened the air rushes through the white-hot bridge and ignites the smoke, the chimney top getting clear in a few seconds. Smoke can be turned on again at pleasure by closing the door, and again stopped by opening it. If, however, the door remains open constantly until next firing time, it will have lost its power—the fact being it has cooled down. The draught through the fire, at the same time, is lessened by the amount of air passing through

* A paper read before the Public Health Section of the British Medical Association.

TABLE I.—APPLIANCES FOR SUPPLYING AIR, EITHER HEATED OR COLD, TO VARIOUS PARTS OF THE BOILER.

Date and Name.	Principle.
	THROUGH THE DOOR.
1796.—James Watt.	By admitting air through furnace door and gradually coking the fuel on a large dead plate.
1800.—Roberton.	By admitting air over the furnace door, and coking the fuel in front of furnace.
1809.—Apparatus at the Mint, Paris.	Two pipes through furnace door. Patented several times, subsequently both in England and France.
1865.—Charles Worsan.	In front of furnace over the fire is a wide tube, on the end of which is a fan-shaped casting receiving a steam injector; opening the fire door turns steam on, which passing through mouth of tube throws a current of air on the fire.
Modern Plans.	Air forced by means of steam injector through the door.
Broadbent's Steam Poker.	By these appliances an increased amount of air can be admitted after firing.
Jones' Steam Injector.	With Broadbent's apparatus the opening of the furnace door turns on the injector and it is stopped automatically.
Redfern's Patent.	These are similar in principle to Worsan's plan, patented in 1865.
Whittle's Steam Injector, and many others.	
Johnson and Others.	Through the Boiler Space.—Air forced or conducted through the water space of the boiler.
1807.—Bradley, and a hundred others.	Through the Bars.—Hollow fire bars for conveying air, or air and steam. Patented over a hundred times since 1807.
	AT THE BRIDGE.
1796.—W. Thompson.	The air was admitted behind the bridge.
1812.—Sheffield's Split Bridge.	The air admitted through bridge was deflected towards the front of the furnace.
Wakefield.	Johnson and others patented split bridges about this time.
1820.—Josiah Parker's Split Bridge.	The air is deflected towards back of furnace.
1840.—Charles Wye Williams.	Modification of split bridge or Argand furnace.
1850.—Galloway.	Patent for a pipe running along the flue and supplying air to the bridge.
Chubb's Split Bridge.	Have doors so that the air is only let through after stoking.
Roscow's Split Bridge.	Split bridges have been patented over and over again where the boiler is not heavily fired, or where burgy is used instead of slack, Roscow's Split Bridge acts exceedingly well. If air be permitted to pass through the bridge constantly as recommended by the Manchester Steam Users' Association and many others, the bridge cools down and the air is not sufficiently heated by passing through it to effect the combustion of smoke; there should be, therefore, either a door or a special pipe to convey heated air to the bridge.
	THROUGH SPECIAL PIPES.
1835.—Coad.	Patent for admitting air at bridge which is heated by passing through pipes along the flue.
1836.—Hart.	Patent for conducting air to bridge through cast-iron pipes running along flue.
1880.—Jones.	Patent for forcing blast of air by a steam injector to a perforated bridge.
Recent Patents.	
Ashworth and Kneen's Patent Regenerative Furnace.	This is one of the best. The air is first heated in the side flues, and forced by a fan into a hot air chamber at the back of the bridge, and there mingling with the gases from the fuel, it impinges upon a series of zig-zag passages, the surfaces of which are at a great heat.
Beveridges.	Patent furnace is similar in principle.

MISCELLANEOUS METHODS.

Date and Name.	Principle.
	ATTEMPTS TO CONSUME SMOKE BY DOWNWARD DRAUGHT.
1669.—M. Delesme.	Downward draught.
1695.—Dr. Papin.	Plan for forcing air down a shaft upon fuel.
1841.—J. C. March.	Patent for blowing air upon surface of fire instead of through fire bars.
Recent Patents.	Knapton Thompson's plan. With this method the difficulty is to raise force, smoke of course must be absolutely prevented, as there is no distillation going on.
	FORCING SMOKE THROUGH FIRE AGAIN.
1838. Cheetham and Bayley.	Patent for drawing the smoke by means of a fan and forcing it through fire again. Patented, with minor modifications, several times subsequently.
1840.—James Smith.	Patent for passing the smoke through the furnace bars a second time.
1843.—Collier.	Patent for cremating the smoke by passing through a second furnace, where air is admitted in large quantities.
1853.—Manasley.	Downward draught, produced by a fan.
1854.	Forcing smoke through fire once more by means of a fan.
1880.—Chapman.	Smoke returned by means of a fan.
1883.—Fear and Hill.	Smoke returned by means of a fan.
	APPLIANCES FOR WASHING SMOKE.
1792.—C. W. Ward.	Patent for drawing smoke into a receiver and washing it with cold water.
1815.—De Chabannes.	Patent for forcing smoke by an air pump through a cistern containing water.
1824.—Jeppies.	The smoke drawn down a second shaft and washed by a shower of water.
1835.—Hedley.	The smoke passes through four or five shafts and is washed by showers of water in the descending shafts.
1853.—Wood.	Patent for condensing smoke in water.
	PATENTS NOT YET OUT.
Johnson. 1890.	The smoke is washed in a horizontal wooden trough.
Elliot's Annihilator.	The smoke is washed by means of water and a fan.

TABLE II.—MECHANICAL STOKERS.

Name and Date.	Principle.
	SPRAY-SCATTERING STOKERS.
1816.—Joseph Gregson.	Coals supplied to the fire by means of a movable sliding box, the end of which is lifted by a can and jerked by means of a spring so as to project the coals on the fire.
1824.—Stanley.	Hopper with rollers to crush coal, and two revolving pans throwing it over the fire.
1870-1882.—Henderson's, Procter's, Bennis, Whittaker's, and Others.	The thrower revolves horizontally. The throwers revolve vertically. These spray-scattering stokers constantly throw small quantities of coal upon the fire. Smoke observations on boilers with these appliances in Blackburn prove that dense black smoke is emitted for 2·3 minutes per boiler per hour and moderate smoke almost continually. Some of these stokers have obtained medals for smoke abatement.
	Spray-Scattering Stokers with Movable Bars.—The various spray-scattering stokers are now generally made with mechanically moved fire bars, and consequently produce much less smoke.
	COKING STOKERS.
1834.—Bodmer.	Travelling bars which received fuel at front of furnace and deposited the clinker at the back.
1841.—Jukes.	Patent for having fire bars arranged in an endless chain which revolved gradually round, carrying the fuel which was slowly coked at the front and depositing clinker at the back. This plan practically solved the problem for externally fired boilers, but cannot be applied to internal flued boilers.
1870-1882.—The Cass Furnace.	The fuel gravitates from a hopper on to a large dead plate, where it is coked by the heat from a fire brick arch at front of flue. The combustible gases are ignited by the air which passes through the white hot clinker at the back of the bars. The bars come out one at a time for four inches, and all go home together dragging the fuel with them, the rate of movement is regulated so that nothing but clinker flows over the back of the grate. *This system has been in use at Mr. Herbert Fletcher's colliery, at Bolton, for thirteen years, and is absolutely smokeless.*
Vicar's Furnace.	Are similar in principle to Cass's, but have shorter fire bars and pushers to force fuel over the dead plate to the travelling bars.
Sinclair's Furnace.	Vicar's Furnace is amongst other places on at the London Hydraulic Power Company's, the Liverpool Hydraulic Power Company's, Messrs. Coats' Thread Mills, of Paisley, Messrs. Musgrave's Cotton Mills, Bolton, all of which are practically smokeless.
McDougall Furnace.	
Hodgkinson Coking Furnace.	Sinclair's Stoker at Penicuik Paper Works, Edinburgh, on a range of sixteen boilers. *Besides being smokeless, it is estimated that they have saved £1,500 in fuel in nine years.*
Knap's Furnace.	Furnaces of the Cass's, Sinclair's, and Vicar's type have been approved of by the Health Committees of Blackburn and Oldham.
The Helix.	In this furnace the fuel is gradually forced by an endless screw from the under part of the grate; like the other coking stokers, it is a perfect smoke preventer, but has not a very high evaporative power.
The Hopcraft Furnace.	Lays claims to the same advantages.

SMOKELESS FORCES.

GRAVITY OF WATER.—This is a good method of generating Electricity for distribution and lighting. Water rams for pumping are frequently used now where previously small boilers would have been employed.

WIND.—The Mills manufactured by the Ontario Wind Mill Company are most useful contrivances. At the King's Norton Infectious Diseases Hospital, the water is pumped into a large distributing tank by one of these wind mills, and thus saves a small boiler being put down.

GAS.—Either ordinary coal gas, water gas, or gas specially manufactured for motor purposes. The DOWSON Gas Producer generates coal gas at about 4d. per 1,000 cubic feet; on a large scale, the WILSON Gas Producer acts well.

COMPRESSED AIR.—For distributing force when raised on a large scale smokelessly. The Birmingham Compressed Air Company generates steam from tubular boilers fed by WILSON Gas Producers, and have already thus displaced small boilers to the extent of about 700 horse-power.

HYDRAULIC POWER.—The London and the Liverpool Hydraulic Power Companies raise their force by VICAR'S Smokeless Coking Mechanical Stokers, and in this way the necessity for a considerable number of smoky, vertical, and other small boilers is obviated.

SIDNEY BARWISE, M.B. (LOND.), D.P.H., M.O.H., BLACKBURN.

the hollow bridge, and smoke is emitted pretty much the same as if it were not there.

With this apparatus the heat would be maintained better by having a series of fire-brick reverberatory arches beyond the bridge. The most modern arrangement on this plan is Ashworth and Kneen's. In this system the air is heated in the side flues and forced by a special pipe along the flue to the back of the bridge and there mixes with the smoke, passes over a series of zig-zag plates of special construction, and the smoke is burnt.

Most of these methods depend upon the attention of the stoker and the quality of the fuel for their success. Six cwts. per hour is fair duty for a 7ft. by 28ft. double-flued Lancashire boiler fired by hand, and whether there is a split bridge or no split bridge, where the work required of the boiler is much more, it cannot be done without creating smoke, except by means of a mechanical stoker; for this reason and the fact that they burn an inferior slack and require less labour, mechanical stokers, at any rate for large boilers, are becoming more used every day, and in Blackburn between 60 and 70 per cent. of the large boilers are fired by these appliances.

Mechanical stokers can be divided into two classes: those that constantly throw small quantities of fuel on the fire at different distances from the front of the grate, and those that coke the fuel, the gases given off in the process of coking being burnt in passing over the clinker.

With regard to the spray-scattering stokers, they certainly diminish dense black smoke, but substitute for it an almost continual out-pouring of smoke of moderate density. In my own district I find that in a large number of cases mechanical stokers of the spray-scattering class have been tried and discarded, for although they may work well at first, in a few months they throw the fuel unevenly, and unless the furnace has travelling bars the rake has to be applied frequently to level the fire, cold air is admitted, heat wasted, and smoke made. Smoke observations made in Blackburn on these furnaces shew that dense black smoke is emitted for 2·3 minutes per hour per double-flued Lancashire boiler, while boilers without any appliances send forth smoke for 2·7 minutes. It is becoming common to make these machines with movable bars, and they certainly then cause much less smoke.

We now come to mechanical stokers of the coking class. Of this form, Cass's, of Bolton, is the simplest, but Vicar's and Sinclair's are equally good. Knap's, McDougal's, the Helix, and Hodgkinson's coking furnaces are also, I believe, very effective in practice. In the Cass furnaces, the fuel gravitates from a large hopper on to the dead plate, where it is coked by the heat radiated from a fire-brick arch. The fire bars come out one at a time for four inches, and then all go back together, carrying the fuel with them off the dead plate, and the half molten clinker flows over the ends of the bars into the ashpit.

Mr. Herbert Fletcher, of Bolton, a gentleman to whom all lovers of pure air have cause to be grateful, and whose experience on this question would be most useful in our legislative assembly, has, for 13 years, been using Cass's Mechanical Stoker at his colliery, and for 13 years his chimneys have emitted practically no smoke.

Vicar's machine is also one of the successful stokers, as the tall chimney by Blackfriars Bridge, belonging to the London Hydraulic Power Company, bears witness. The principle of it is practically the same as Cass's; it has no distinct fire-brick arch, short bars and a series of pushers to feed the furnace. Messrs. Musgrave and Sons, of Bolton, write that they have tried a variety of methods during the last 17 years, including six different kinds of mechanical stokers, and they were never satisfied till they put on this coking stoker. Sinclair's stoker is very similar to Vicar's; it appears to be capable of heavier duty, and at Messrs. Peter Crook's, of Bolton, 93 tons of cheap slack are burnt each week of 56 hours smokelessly in three 30 feet by 8 feet Lancashire boilers, rather less than was previously burnt by hand firing. There is, however, danger of the fire bars burning unless the fireman does his duty.

The Health Committees of Blackburn and Oldham made independent inquiries into the best means of abating the smoke nuisance, and both approved of coking mechanical stokers only. Several coking mechanical stokers have already been applied at Oldham with most satisfactory results. At the West End Old Mill 15 observations of an hour's duration, before Cass's furnace was applied, gave an average of 14 minutes, 32 seconds dense black smoke. Eight observations since of an hour's duration give an average of 24 seconds.

At the West End New Mill the same furnace has been applied, and reduced the smoke emitted from an average of 7 min. 32 secs. to 6 secs. per hour. At the Wrigley-street Mill eight observations, before Sinclair's furnace was put on, shewed dense black smoke was emitted an average for 8 min. 41 secs. per hour, while eight observations of an hour's duration, since it has been applied, shew that absolutely no dense smoke has been emitted.

It is not, therefore, for want of means of abating the nuisance that the anti-smoke movement has been so unsuccessful. The fault lies at the door of the Sanitary Authorities, who in the past have shirked their bounden duty under the Public Health Act, in not specifying the means of abating this nuisance when dealing with it under that Act.

The first part of the 7th Clause of the 91st Section of the Public Health Act defines as a nuisance, "Any fireplace or furnace which does not, as far as practicable, consume the smoke arising from the combustible used therein, and which is used . . . in any manufacturing process whatsoever." The same section provides, in its last paragraph, that the Court shall dismiss the complaint if it is satisfied that such furnace is constructed in such a manner as to consume, as far as practicable, its smoke. If these words have any meaning, when applied to horizontal boilers, they mean, if they are fired by coking mechanical stokers, and not unless. That the authority must specify the means of abatement is quite plain, since Mr. Justice Mathew and Mr. Justice Smith delivered themselves so strongly on this point in the case of Regina *v.* Wheatley. Mr. Justice Smith's words are :—

> This point has frequently been involved incidentally in former cases, though not yet precisely decided, so that we are not bound by any authority. I agree with my brother Mathew that the necessary effect of the sections is that the order must specify the works to be done; the notice served under section 94 must state a time for abating the nuisance, and the things to be done. If any of the requisitions are not complied with by section 95, the party may be summoned before the Justices. That section would not have been expressed as it is if the particulars were not to be specified in the notice of the nuisance. I also think that the forms given in the schedule shew that these particulars must be part of the order, as was said in Regina *v.* Llewellyn.

At Bolton, owing to a case having to be withdrawn, the authorities there now specify the use of a mechanical stoker as the means of abatement, but I doubt whether this notice be good. How much better, then, to take the bull by the horns and specify known and accepted means of abatement, instead of taking shelter behind vague phrases. In cases of special difficulty it might be necessary to consult a specialist. Perhaps the new society for testing smoke preventing appliances would advise, but in the case of ordinary horizontal boilers the specification of coking mechanical stokers, with which the use of the rake is not required, would soon put an end to a nuisance which is a disgrace to our vaunted sanitary progress and civilization.

Bleaching, Dyeing, Printing, etc.

NEW COLOURING MATTERS.

During the past two months several new dyestuffs have been introduced. We have to thank the manufacturers of same for placing samples at our disposal for the purpose of testing them, and now give readers of *The Textile Mercury* the benefit of the results of our tests with these new and interesting products.

RHODAMINE S EXTRA.

Rhodamine must be by this time well known to most dyers as a colouring matter capable of dyeing very bright and fast pinks, especially on silks. Lately a new brand known as Rhodamine S or S extra, has been placed on the market, which is capable of dyeing cotton without a mordant, although it gives faster shades on tannin-mordanted cotton. The dye-stuff itself is in the form of a dark grey crystalline powder, readily soluble in water to a crimson solution. The solutions in alcohol and acetic acid have an orange fluoresence. Dilute acids have no action on the aqueous solution, and alkalies discharge the colour and give a colourless precipitate of the colour base. It is a strong colouring matter, ¼ per cent. being sufficient to impart a fair shade of pink to fibres, while with 1 per cent. very full shades are obtained. On cotton it can be dyed by simply boiling in a bath acidulated with acetic acid, but faster and bluer shades are got on tannin-mordanted cotton. On wool and silk it can be dyed in a slightly acidulated (acetic acid) bath and gives good results, especially on silk. The shades are not perfectly fast to light although they resist it pretty well. Strong acids turn the colour yellow, acetic acid turns it slightly more scarlet, and boiling in soap almost discharges the colour, while alkalies completely decolourise the dyed fibre.

PALATINE SCARLET.

This is a new dye-stuff for wool, on which it is dyed in the usual way. It gives good, full, and bright shades of scarlet, which are fast to light but not to soap, the latter almost discharging the colour. Acids have no action but alkalies turn the colour more yellow.

PALATINE RED.

A similar dye-stuff to the last. It is dyed in the same way and gives crimson shades; is fast to light and acids, while alkalies turn the shade browner, and boiling in soap causes the colour to bleed slightly.

AZO GREEN PASTE.

This is a dye-stuff belonging to a new series of azo colours—the azotriphenylmethane dye-stuffs, as the patentees have named them. To judge from the properties of the one now under notice, they have substanto-adjective properties, *i.e.*, they are capable of dyeing on mordants self-shades. Azo green is sent out in the form of a

paste of a blackish green colour, not soluble in water, but soluble in alcohol and acetic acid. Acids turn the colour of the solution, which is formed on diluting the paste with water, reddish brown; while alkalies have no action. On wool it can be dyed in the usual way, but faster and better shades are obtained if the wool be previously mordanted with bichromate of potash and oxalic acid. The shades obtained are bright and full, much brighter than can be got from cœruleine. Strong mineral acids turn the colour amber, or reddish; acetic acid has no action; and caustic soda has no action when the swatch is spotted with it. Boiled with soap the colour loses much of its depth, but there is no bleeding into or staining the whites. Boiled with soda the colour is turned yellower, and there is some loss of depth. It is fast to air and light. On jute it may be dyed without mordant; on silk with a little acetic acid.

BRILLIANT AZURINE 5 G.

This is the latest of the well-known azurines. It dyes in a neutral bath on unmordanted cotton very fine bright shades of blue. The dyestuff itself is sold in the form of a greyish black powder, soluble in water and alcohol to a reddish blue solution. In the aqueous solution hydrochloric acid produces a blue precipitate; and caustic soda turns the colour of the solution crimson. With a little acetic acid it is best dyed on cotton in a bath of Glauber's salt and phosphate of soda, although it gives good results when sulphate of soda and soap are used. The shades obtained are fast to acids, strong nitric acid only affecting it and turning it red. Caustic alkalies turn it red; boiled in soap it bleeds slightly, and the shade is reddened somewhat. The shades are rendered much greener and more resistant if after dyeing the goods are passed through a bath of copper sulphate.

On wool in a neutral bath brilliant azurine gives redder shades than on cotton, but in baths slightly acidulated with sulphuric acid fine navy-blue shades are obtained. The dyebaths are not completely exhausted, and only about half quantities of materials are required for each subsequent bath.

Brilliant azurine dyes well on silk, either in an acidulated bath or in a broken soap bath. For half silks it will prove very useful, as it dyes both the cotton and the silk the same shade, a fine, bright navy-blue. We regard brilliant azurine as likely to be one of the most useful colours that has been placed on the market for some time.

AZINE GREEN.

This is a new basic green dyestuff sent out in two shades, BO and GO, blue and yellow shades. Of all green colouring matters this dyes the deepest shades. It dyes mordanted cotton in the usual way, BO giving deep blue shades of green and GO slightly yellower, but still bluish shades. They are very fast to light, acids, and alkalies. For very deep fast greens azine green will be very useful. It can also be printed on cotton with a colour made of acetic acid, tannin, and thickening, in the usual way.

STANDARDS IN COLOUR MIXING.

Every colour mixer to a calico printer knows what standards are, or, at all events, should know; but what many do not know is the right way to use them, for like every other good thing they are liable to be abused.

It is well known that a colouring matter will give a great variety of tints or shades—it is a pity that dyers and calico printers mix up these terms so much—according to the proportion of colour used. Thus, a yellow dye-stuff which the writer has been using lately gives a very nice yellow when from ¾ to 1 per cent. is used, and an orange when 4 per cent. is used. Practical calico printers are well aware of this, and they take advantage of the fact to produce a variety of shades and tints, which they do by first making a standard colour of a deep tint, and then to get paler tints they make other colours from this standard by adding varying quantities of thickening. Thus, an alizarine red standard can be made as follows:—

Alizarine, 2 lb. 4 oz.,
Thickening, 17 lb. 8 oz.,
Red liquor 16° Tw., 17½ oz.,
Acetate of lime 21° Tw., 8¾ oz.

This when printed will give dark reds. Now, by taking, say,

1 gallon of above alizarine standard,
3 gallons of thickening,

making a new colour, which will give a deep rose, by diluting with more thickening, thus,

1 gallon of standard,
6 gallons of thickening,

pale rose tints can be printed.

In this way a "standard" can be made for every colour. It is not always that the standard need be used to print with, but it is there ready to make other printing colours by addition of thickening, or by adding proportions of other standards compound shades and tints can be obtained. To use the standard colours in this way is perfectly legitimate, and the colour mixer has at his command an easy means of obtaining a great variety of tints and shades.

But if the colour mixer is not an intelligent man—is, indeed, one of those rule-of-thumb men who mix things in a haphazard way—this mixing of standards is rather liable to become confusing, and they become so mixed up that the colour mixer scarcely knows what he is using; at all events, it is doubtful whether he could give any idea of the proportions of the ingredients present. Thus, to quote some examples, take the following range of colours:—

Fawn Colour.

Brown A, 5½ quarts,
Yellow C, 4 gills,
Chocolate I, 9 gills,
Light brown F, 2 gallons,
Starch paste, 5½ gallons,
Black F, 2 gills.

This is taken from a colour mixer's recipe book. Now, if each of the above constituents were a standard, one might not object to it; but if we analyse them, brown A is a standard colour made as follows:—

Brown Standard.

15 quarts water,
6 quarts acetic acid 8° Tw.,
6 quarts alizarine orange,
9 quarts bark liquor 13° Tw.,
3 quarts gum tragacanth liquor,
13½ lb. starch.

All boiled, allowed to cool, and then is added

6 pints acetate of lime 20° Tw.,
9 pints acetate of chrome 20° Tw.

The yellow C is a standard made with starch paste, acetate of chrome, and new yellow. The chocolate is made up of water, starch, gum tragacanth, and another chocolate mixture, which, in its turn, is made with Bismarck brown, magenta, mauve, and black standard colours, to give the composition of which is not necessary. The light brown F is also made with three standard colours. It would puzzle a lawyer to answer offhand what is in the fawn colour when it is made, and it would take some time to work out the proportions of them. How much better it would be if the colour mixer had made a really new standard from the fundamental constituents, and thus shewn an intelligent knowledge of his work, and not, as is evident, a rule-of-thumb knowledge.

At the present time there is too much empiricism among colour mixers in compounding their colours, and they are far too complicated. There is plenty of room for simplification in calico printers' colours, the complexity of which is due to several causes, among them being want knowledge of colour from an optical point of view, and want of knowledge of the properties of the constituents of colours, which leads to wrong use of them.

BLACK ON JUTE.—For 100lb. jute. The goods are first steeped for 24 hours in a boiling solution of 20 lb. logwood extract and 5 lb. fustic extract in 330 gallons of water. They are then exposed to the air for a few hours, and again steeped in the logwood liquor, these operations being repeated two or three times. Then in another bath they are treated with 80 lb. sulphate of iron and 5 lb. copper sulphate, the bath being brought to the boil and the goods immersed in this for 24 hours, after which they are washed and dried.

A GERMAN firm of colour makers are introducing a new chrome mordant for alizarine dyes on cotton, thus opening out a prospect of being able to obtain new fast shades in that fibre.

ACCORDING to Professor Church, indigo as a pigment is quite useless, because of its want of permanence. Two years of exposure causes a reduction of 90 per cent. of its intensity. Why indigo used as a pigment is so fugitive and when used as a dye is so permanent is a puzzle.

THE following composition is given in a German contemporary for a soft, silky finish on cotton goods: For 100 litres of composition use 2½ kilos. shellac, 5½ kilos. dextrin, 750 grms. lard, 400 grms. soap, 300 grms. spermaceti, and 300 grms. white wax.

FOR dyeing mixed silk and wool goods, alkaline blues give good results, dyeing both fibres equally well. For blacks, naphthol black is excellent, and it also gives good shades of grey and navy blue, the black being fully developed by addition of green or yellow. For greens, naphthol green may be used; it gives solid shades on such fabrics.

THE amount of indigo in dyed fabrics may be estimated as follows:—A solution of sodium hyposulphite is prepared from sodium bisulphite of 60° Tw., and 100 c.c. of it are mixed with 100 c.c. of milk of lime and 2 litres of water. Of this mixture, 200 c.c. are placed in a flask with 10 grams, of the dyed stuff to be examined, and the flask and its contents are heated to between 150° and 180° F., a stream of coal gas being passed through the flask at the same time. The dyed stuff is gradually decolourised, and, when complete, the solution is rapidly poured off the cloth, and hydrochloric acid is added to precipitate the indigo tin. The mixture is allowed to stand for 12 hours, is filtered, washed, and dried, the indigotin is dissolved in about 10 c.c. of fuming sulphuric acid, and the solution titrated by potassium permanganate.

DYEING ANILINE BLACK.—Two French dyers have patented a process for dyeing aniline black, but wherein the novelty consists is not very perceptible. The cotton is impregnated with a solution of hydrochlorate of aniline and chlorate of soda, to which a little salt of vanadium has been added; then it is put into a closed chest for 24 hours, the temperature being kept at from 30° to 40° C., and the atmosphere of the chest moist by a jet of water vapour. At the end of the 24 hours the piece will be green, and it is now exposed to the air for a variable period (from two to eight days) until it becomes black, the length of time depending upon the strength of the impregnating liquor. By using a bath of bichrome the black may be developed immediately. Fortunately the patentees don't seem to make any great claim for novelty, and they certainly cannot claim speed.

WEIGHTING SILK is the subject of a patent taken out in France in connection with the use of metallic salts, such as those of tin, lead, bismuth, nickel, etc., with tannin substances such as catechu, divi divi, cutch, etc., the goods being successively passed through a bath of the tannin and then into the metallic salt. In this there is no novelty, although the patentees say that it differs from the usual way, "which is to put all the materials together in one bath." This is novel information, which, however, we feel disposed to discredit. One part of the invention is new—that is the use of magnesium chloride along with the metallic salt, which is said to be kept in clear solution by this means, but it is obvious that it can only be used with tin or antimony salts, and not with lead salts, which it would precipitate. There does not seem to us to be any very practical benefit likely to arise from the new process.

INDESTRUCTIBLE BLUE ON COTTON.—The following process is given in a French patent for dyeing a fast blue on cotton, which can replace indigo. For 100lb. cotton, this quantity is boiled during two hours in a bath containing 8lb. extract of logwood, and 10lb. of soda crystals; it is allowed to cool while in the bath, and is washed and worked for a quarter of an hour in a cold bath of 10lb. of sulphate of iron, then rinsed, dried, and again entered into the first bath, to which has been added 2lb. extract of logwood and 3lb. soda crystals. In this it is

kept for one hour at from 80° to 100° Fahr., is then washed, dried, and passed into a bath of soap and soda, then entered into a boiling bath containing 5lb. of soap, 5lb. of salt or sulphate of soda, and 1¼lb. of aniline blue (to which no name is given, but presumably one of the direct dyeing cotton blues is used). In this bath the cotton is worked for one hour, after which it is washed and dried.

M. J. E. CHEVALLOT describes a new process of dyeing textile fibres with mordants of insoluble resinates. The process consists in impregnating the tissue first with a solution of alkaline resinate $KOC_{45}H_{29}O_2$, then plunging the tissue in a bath of a metallic salt. There is a decomposition between the two salts, resulting in the formation of an insoluble resinate which possesses a great affinity for colouring matters. When acetate of alumina is used the resinate formed has some important properties; the tissue becomes impervious to water. Zinc sulphate also gives satisfactory results. The resinate of alumina has affinity for colours having basic properties, and the resinate of zinc for acid colours. The alkaline resinate bath is made with 200 litres of caustic lye containing 6 kilos. 417 grams. of actual caustic potash, then while being heated 40 kilos. of resin are added in small quantities at a time with constant agitation. The product is concentrated till it contains 20 per cent. of resin; it is then diluted with 19 times its volume of water when it will contain 1 per cent. of resin, which is the strength at which it is used. This bath is used warm.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, AUGUST 16TH.

The labour question has rarely attained such a prominent position in the history of this country as is the case at the present time. The eight hours' movement is still being discussed. One of the arguments employed by its supporters is that the gross product of labour would not be reduced by a decrease in the number of hours worked, as the loss in time would be compensated for by the increased activity, earnestness, and spirit shewn by the working men. To this the opponents of the movement reply that the argument is tantamount to an admission that the *ouvrier* at the present time is not doing his duty towards the man who employs him. But, *bien entendu*, these opponents do not admit that any solid grounds exist for the belief that the product of labour under an eight hours' system would be equal to what it is at the present time. Without either condemning or approving of the theory of the eight-hour advocates, the employers assert that 20 per cent. reduction in the time for working must be accompanied by a 20 per cent. reduction in wages. There is not, I suppose, anything novel in such contentions, which are no doubt familiar to Europeans who have studied the question.

It is difficult to foretell how the strike on the New York Central will end. The battle is one of life and death, as far as the present organisation of the Knights of Labour is concerned, and just now it looks as though the Vanderbildt interest will win. The Knights has been badly managed for years, the result being that the membership has fallen away to a very significant extent. The officials of the body appear to be ignorant of the fact that such positions as theirs require tact and qualities of self-effacement for the common weal. In matters of this sort the Americans have much to learn from England. Republican braggadocio to the contrary notwithstanding, the old country is still a paradise to the working man compared with the States. Here the capitalist is supreme, thanks to the aid of the Pinkerton men with their revolvers, which are used freely in case any strikers become too persistent in advocating their claims. There is, practically speaking, no liberty worthy the name for the working-man when he can be shot down like a dog, as is the case here. A Pinkerton organisation could never exist on the free soil of Britain. The people would crush it immediately it was put to such a use as here. The Knights found themselves unable to control more than a fraction of the very men whom they had called out, and they failed absolutely to secure the assistance which they had expected in the way of sympathetic strikes from the firemen and engineers on their own road or from the freight handlers on other roads. Even the railroad employés at Albany and Syracuse, where violence was at one time threatened, gave way with unexpected suddenness and without destruction of property. It was apparent, therefore, to everybody, that the strike was a last desperate move on the part of the Knights of Labour to save themselves from utter extinction.

As our cotton manufacture is diversified and the production of finer fabrics increases, the importation of foreign cotton tends to increase. Thus, in the calendar year 1889 we imported 7,368,106 pounds, as compared with 6,444,401 pounds in 1888, and 5,192,859 pounds in 1887. The value of the cotton imported last year was $1,190,687, an average per pound of over 16c. When it is considered that our mills obtained the great bulk of their cotton last fall at 10c. and 11c. per pound, the character of the cotton imports is apparent.

The *Dry Goods Economist* is still keeping alive the native linen question. In a letter to that journal, dated August 11th, a correspondent states that Secretary W. D. Hall, of the Minneapolis Board of Trade, says that the experiment of making linen here from native flax is soon to be made on a large scale. Mr. Hall thinks that even in case the experiment should prove a failure, Minneapolis would still become an important shipping point, and the flax fibre that cannot be used here can be shipped to Ireland. There is every prospect, however, that large mills will be established at Minneapolis very soon. A site has already been selected, with trackage facilities and ample room for growth. The mills will employ about sixty men at the start. A competent superintendent has already been sent for, and will arrive from Ireland in the middle of the week. It is the intention of the parties having the matter in charge to put the mills in running order in time to handle a part of the present flax crop, which will be a very large one.

Another link in the chain of home manufacture of flax has been supplied by Messrs. G. T. Smith and John McGrath, of Minneapolis, who gave an exhibition recently of a machine invented by them to thresh flax without destroying the fibre. The inventors have secured a patent, and with other parties will commence its manufacture under the name of the "Minnesota Flax Thresher." The test was so successful that a leading flax grower from Hastings, Minn., purchased the machine on the spot. Mr. Eugene Boess, of St. Paul Park, Minn., who was present at the test, says that last year he raised eighty acres of flax, and from it obtained twenty-five tons of flax straw, which in fibre form brought him $240 per ton.

The knit goods mills at Cohoes, with one or two exceptions, are all running on good time, and the manufacturers in many cases are considerably pushed in deliveries. Orders have been coming in more freely within the past few weeks, and some of the mills have begun to run overtime. Still, only the usual amount of business has been done, and the manufacturers are not as a rule satisfied with the present condition of trade. Prices have become so low and competition so keen that to make much money in the business to-day a steady and large business is necessary.

Speculation on the tariff and proposed knit goods syndicate has subsided somewhat, although the uncertainty of the former is undoubtedly having a bad effect on the trade generally. Manufacturers are almost unanimously in favour of its immediate passage, and resolutions to that effect were adopted at the recent meeting of manufacturers at Albany for considering the knit goods syndicate. The following is from the *Troy Times*:—"About the most significant feature of the proceedings was the adoption of resolutions emphatically endorsing the McKinley Tariff Bill as passed by the House of Representatives and calling upon the Senate to promptly enact the same measure. There can be no doubt that the resolutions express the overwhelming sentiments not only of the knit goods men, but of manufacturers generally in the large industrial field hereabout. The settlement of the tariff question is an absolutely necessary prerequisite to the restoration of confidence and the successful prosecution of business. Trade languishes now because of the uncertainties of the future, while foreign importations are pouring in to embarrass and jeopardise home producers. Manufacturers and their employés demand that the tariff question shall be disposed of as speedily as possible, and they have the right to make the demand because that was precisely what they were promised in the last presidential campaign. The House has done its duty. It has met the requirements of the case and kept the pledge made by the Republican party in 1888. The Senate cannot afford to stand as a stumbling-block in the way. The general course for it to pursue is plainly marked out for it. Acceptance of the McKinley Bill, as regards the main provisions of that measure, would be approved by the industrial masses of the people. The resolutions passed at Albany voice the sentiment of capital and labour on that subject with no uncertain sound."

The plan of shutting down the print cloth mills in order to curtail production, went into effect on Monday morning. In Fall River this curtailment is not meeting with general approval, and it looks as if a number of the companies would call in their help and start their mills next Monday. This is somewhat sudden to those interested in Fall River affairs, who looked for a long suspension. Many agents were known to be in favour of an extended period of curtailment, but the fact that some mills were slow to enter the combination, and that one or two factories are even now running, has acted as a check on the plan.

A Reuter's telegram, dated Washington, Monday, says:—The Senate was to-day occupied with the discussion of the Tariff Bill. Mr. Vance proposed an amendment to the effect that if goods be purchased abroad by a citizen of the United States by means of exchange for home farm products, such goods shall be admitted into the United States on payment of half the present duty in the case of manufactures of iron and steel and earthen, china, and glass ware, of a 40 per cent. reduction for woollen and cotton goods, of 30 per cent. for fertilisers, and of 25 per cent. for jute bagging and farmers' binding twine.

It is alleged in an influential German monthly that the textile market of Bulgaria is mainly under the undisputed sway of English manufacturers, "who go as far as possible in the production of cotton goods which are cheap but bad." "For the Levant," observes the writer, "cheap and bad seems to be the first principle of the English cotton industry."

THE firm of Baudoin, in Bernau, is now endeavouring to introduce silk weaving into Upper Silesia, in order to provide occupation for the handweavers, whose craft is in danger of extinction. A silk-weaving establishment has been opened by way of experiment at Zöls, employing 24 looms. If the experiment proves satisfactory, the firm intends to build a factory with 100 looms.

ACCORDING to a German contemporary, the Government of the United States has, for a considerable time, made secret inquiries in Europe, principally in Germany, about the conditions of labour and manufacture, and it is positively asserted that their reports will be used in favour of the McKinley Bill. German manufacturers are therefore advised to treat American visitors with the greatest caution and reserve.

M. ANTOINE DANSAERT, formerly a Radical member of the Belgian Chamber, and one of the most eminent political economists of Belgium, has just died at Brussels. Those Englishmen who took part in the International Congress of Commerce at Brussels in 1880—Mr. Kennedy, of the Foreign Office, was the delegate of the English Government to it—will recollect M. Daneaert as president of the Congress. As president of the Union du Crédit, the Tribunal of Commerce, and the Chamber of Commerce (Union Syndicate) he rendered the greatest services to the trade and industry of Brussels and Belgium.

News in Brief.

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Accrington.

In connection with Messrs. Howard and Bullough's works at Accrington is a large room measuring 100ft. by about 50ft., and of proportional height, which the proprietors have devoted to the purposes of technical education and the exhibition of machines. This room is at the top of their handsome new building, and it has been decided to have it suitably decorated. Designs and plans were obtained from some well-known firms, and those of Mr. W. H. Cunliffe, of 21, Church-street, Blackburn, have been accepted. The competition, which was a severe one, was decided upon its merits, and when completed the room will be one of the handsomest in the country.—*Evening Express.*

Ashton.

The recent heavy rains have had the effect of causing a small landslip around the boiler premises of the Waterside Spinning Company's mill. Although not so much actual damage was done, yet it necessitated the stoppage of the mill during this week. Every effort is being made by Mr. Kinsey, the manager, and his staff of workmen to get the mill to work as soon as possible.

Astley.

The cotton spinning mill belonging to Messrs. T. and C. H. Arrowsmith and Co., Astley, commenced to run full time at the beginning of the week.

Bacup.

The Rossendale Industrial Co., Limited, have placed the order for repairing, solidifying, and securing the steam engine foundations at their Mode Mill, Bacup, with Messrs. Fox and Williams, of Manchester, to be done with their patent fusible metallic cement. The work will be carried out during this week end, and will be ready for running at the usual hour on Monday morning.

Blackburn.

On Saturday, the weavers employed at Messrs. Birtwistle and Thompson's, Stanley-street, presented Mr. John Holden, their late overlooker, with a marble timepiece, on the occasion of his leaving.

Mr. James W. Fairhurst, late overlooker at Commercial Mill, was, on Saturday, presented with a handsome easy chair, by the weavers employed at the mill.

Bolton.

At Bolton Police Court, on Saturday, Margaret Macdonald, John Morrison, and Hannah Morrison were charged with a series of extensive robberies from the mills of the Rothwell Hosiery Company. Both the female prisoners had been employed there, and in their houses was found an immense quantity of property, which was identified as belonging to the company. In the male prisoner's a large number of pawntickets was found. All the stolen property is not yet recovered. The prisoners were remanded. On Thursday the prisoners were again brought up, when the Morrisons were sent to prison for a month with hard labour, and M'Donald for six months with hard labour.

Boothstown.

Boothstown Mill, the property of Mr. Henry Yates, is to be closed every Saturday and Monday for a month hence on account of the slackness of the trade.

Bradford.

We regret to announce the death of Mr. Leopold Fulda, senior partner in the firm of Schuster, Fulda and Co., stuff merchants, which took place at his residence, 9, Claremont, Bradford, on Wednesday. He was born in 1825, his native place being Frankfort-on-Main. In 1843 he came to England and entered the house of A. S. Sichel and Co., in Bradford. After remaining with that firm a short while, he entered the house of Leo Schuster Bros. and Co., of Bradford and Manchester. He ultimately became their manager, and in 1874 he was made a partner, the style of the firm being changed to Schuster, Fulda and Co. For many years he took an active and useful part in the business of the Council of the Bradford Chamber of Commerce, and he was probably one of the oldest members of the Chamber. Mr. Fulda also engaged actively in political work, and since the Liberals split upon the Home Rule question has identified himself with the Liberal Unionist party. The deceased gentleman was a bountiful contributor to all local charitable institutions.

The death of Mr. Wm. Peel, J.P., took place on Tuesday, at his residence, Birk Lea, Harrogate. His death removes another from the diminishing number of commercial men who were actively engaged in the worsted industry of Bradford during its transitionary period, and who profited by the energy and enterprise thrown into it during that critical stage of its history. He was a native of Shelf, near Halifax, and came to Bradford to commence the business of worsted manufacturer about the year 1836. Shortly afterwards he established the firm of Patterson, Peel and Co., merchants and manufacturers, who carried on business at Portland Mills, Manchester-road. This firm had a comparatively short existence, and that of Wm. Peel and Co. was founded in the year 1839, with a business embracing both the manufacturing and merchanting of worsted goods. The firm of Wm. Peel and Co. had a vigorous and prosperous career. It had branch houses in Manchester, London, and Paisley, and was among the first to establish a direct trade in Bradford manufactures with America, the firm trading in New York first under the style of Messrs. Thomas McClune and Co., and subsequently as Messrs. Samuel McLean and Co. At the same time a very large home trade was being done. In commercial circles Mr. Peel was well known for the close attention he bestowed upon his business affairs, and he was one of the hardest workers in the trade. In 1844 his firm erected a stuff warehouse in Bridge-street, with a frontage to Norfolk-street, which, at the time, was considered to be the handsomest place of business in Bradford. Mr. Peel took part in the business of the Corporation, but otherwise he manifested little interest in public affairs, political or otherwise. He had the distinction of being the last surviving representative of the first Town Council, elected in 1847. He was elected a member of that Council for the South Ward. He was afterwards made an alderman of the borough. More than once he declined the Mayoralty, owing to the pressure of business affairs.

Bury.

The annual holidays commenced at Bury on Saturday morning. All the mills and principal workshops were closed on Friday night, and work was not resumed until Wednesday. On Saturday many thousands of persons left the town for Blackpool, Southport, Morecambe, and other places, by trips which were run by the railway company and various tradesmen, about 10,000 altogether being booked. Formerly the mills stopped at various times, but now they close on a uniform date by arrangement between employers and workpeople.

Cleckheaton.

The machinery, etc., at the Central flannel mill is advertised for sale by auction. Hopes had been entertained that the business would be disposed of as a going concern, but this announcement dispels that idea.

Many alterations and additions have of late been made at Victoria Mills (Messrs. G. Anderton and Son). The last improvement has been the erection of a new suite of offices, handsomely furnished and fitted up.

Chorley.

William Rothwell, a "feeder" in the employ of Messrs. Nixon and Killick, cotton manufacturers, of Moor Mill, was summoned under the Employers and Servants' Liability Act for having absented himself from work, and 1s. 9d. damages were claimed. Mr. T. A. Jackson, for the prosecutors, said that defendant had been employed about twelve months at the mill as a "feeder," and frequent complaints were made to him as to his constantly absenting himself from work. On the 11th August he did not come to work at all, and although he turned up at six next morning, he left again at breakfast time, and did not come again for two days. His place had then been filled by a "mixer," and through the defendant's neglect of work his employers had been put to 1s. 9d. expense, having to engage in his place a man who was paid a higher rate of wages. Defendant alleged that he had suffered from a swollen face, and was unable to attend to his duties, but the foreman carder said no complaint was made by the defendant of being ill. The Bench ordered defendant to pay the 1s. 9d. damages claimed, together with costs of the summons, Mr. Jackson saying he would not press for advocate's fees.

Culcheth.

Owing to work being poor at Daisy Bank Mill, Culcheth, numbers of the hands have gone to Bolton, Tyldesley, and other places. We are informed that things will probably very shortly take a turn for the better.

Darwen.

The Messrs. Harwood Brothers, of the Hey Fold Weaving Mill, are at present adding 160 more new looms to these premises, which will bring the number up to about 560.

Drighlington.

On Monday evening, the watchman at the Rag Mill, Drighlington, belonging to Messrs. Middleton, Liley, and Co., discovered that a quantity of wool was on fire in the drying-room near the boiler-house. The fire brigade was telegraphed for, and in two hours' time the flames were subdued. The boiler-house was totally destroyed. The damage is estimated at £100.

Golborne.

About 80 fresh looms are being erected in Messrs. Halliday and Constantine's mill in place of a number that have been taken out.

Guiseley.

Plans for the enlargement of a shed for Messrs. Peate were adopted at a meeting of the Local Board, held on Monday.

Halifax.

The third session of the Technical Institute commenced on Wednesday evening, when a good number of students presented themselves. A number of new and improved handlooms have been added to the working plant, several power-looms are promised by eminent makers, and a gas engine of the Campbell make, and shafting, have been generously provided by Councillor Clayton.

Hipperholme.

On Monday the death occurred, at the age of 81, of Mr. Peter Allatt, retired fellmonger and wool-stapler, of The Crescent, Hipperholme. Mr. Allatt came to Brighouse over 50 years ago, and established a successful business as fellmonger, and subsequently added to it the business of wool-stapling at Halifax.

Hurst.

The marriage of Miss Constance Mabel Rowley youngest daughter of Mr. A. B. Rowley, J.P., D.L., of the firm of Messrs. O. Whittaker and Co., Hurst, to Captain Ralph Aostruther Henderson (Manchester Regiment), was solemnized on Saturday afternoon at St. John's Parish Church. The ceremony was performed by the Dean of Carlisle, father of the bridegroom, assisted by the Rev. T. Butterworth, M.A., Vicar.

Keighley.

On Monday evening, a fire was discovered on the premises of Messrs. W. Summerscales and Sons, machine makers, Coney-lane, but the flames were extinguished before any serious damage was done. The damage is estimated at about £75.

Kidderminster.

Messrs. H. R. Willis and Co., of Worcester Cross Carpet Mills, have issued a catalogue to their customers announcing their annual sale of stock of Brussels and Wilton carpets. Hitherto they have only had an annual clearance of their surplus pieces, but on the present occasion they intend placing the whole stock, consisting of about 1,200 pieces, without reserve under the hammer. The sale takes place in the large show-room of the firm on September 4th, and a considerable number of buyers are expected to attend. With the catalogue Messrs. Willis also issue a circular to their friends announcing a thorough re-organisation of their business and alterations they intend to make in the quality of the goods they will in future manufacture.

Leeds.

The joint board of representatives of the Leeds Chamber of Commerce and of the Leeds Trades' Council have appointed Mr. W. Beckworth, president of the Chamber of Commerce, and Mr. W. Marston, president of the Trades' Council, respectively as president and vice-president of the newly-formed Leeds Board of Conciliation, and Messrs. R. K. Calvert and John Bune as hon. secs. of the Board. A code of rules has been framed, which specifies that the Board shall limit its action to trades disputes in Leeds; that the Board should not interfere in disputes where there is any reasonable prospect of settlement; that where a settlement is not likely the Board shall invite the parties to meet to consider their differences, but that no action shall be taken by the Board unless both parties should agree, in writing, to that course. Other formal rules are appended.

The death is announced of Mr. William Firth, of Burley Wood, Leeds, which occurred on Tuesday morning at his Scarborough residence, Belvoir Villa. The deceased was in his 82nd year, and in the course of his long life was identified with many public undertakings. He was a native of Leeds, but after leaving school he entered the house of Messrs. A. and S. Henry and Co., Bradford, and eventually he became a partner in the firm. After that he was instrumental in forming the firms of Firth, Ramsden, and Co., and Firth, Booth and Co., who had houses in Leeds, Manchester, Bradford, and other places, and had a large connection

in America. The name of Mr. Firth, however, is mainly associated with many of the railway projects in Yorkshire. He quickly appreciated the importance of having the various commercial centres of the West Riding connected by railroads; and although several of the schemes which he was instrumental in bringing to a successful issue met with stout opposition, he never got discouraged. The railways with which he was most intimately connected were the Bradford, Wakefield, and Leeds line, of which he was the chairman; the Leeds, Bradford, and Halifax Junction Railway, of which he was a director; and the West Riding, Hull, and Grimsby Company, which he helped largely to promote. Subsequently the two lines first mentioned were merged into the Great Northern and Lancashire and Yorkshire Companies, of which he became a director. His connection with the Great Northern management was only severed a few years ago. Mr. Firth was also practically the founder of the West Yorkshire Coal and Iron Company, Limited, and was for many years its chairman. In 1858 he was placed on the Commission of the Peace for the borough of Leeds. When the Hartley Colliery disaster was announced, Mr. Firth was the first person in Yorkshire to come forward with a handsome subscription in aid of the sufferers. He was a member of the Established Church, and in politics was a Liberal Unionist.

Liverpool.

The death has taken place at his residence, Ellerslie, Carlisle, of Mr. Peter Rothwell Arrowsmith, a Liverpool cotton merchant. The deceased, who was 75 years of age, was for 13 years a member of the Bolton Town Council, and mayor from 1853 to 1855. He was then a prominent cotton spinner in the town. He did much public work, and was the founder of the Lostock Industrial School.

Macclesfield.

Messrs. Josiah Smale and Sons are building a new silk mill in Sunderland-street to take the place of the weaving shed which covered the same area.

The Lord Chancellor has just added the following names (amongst others) to the commission of the peace for the borough of Macclesfield:—Alderman Jas. Kershaw, mayor; Alderman George Swindells, ex-mayor; Mr. Edward Eaton, Mr. Arthur John Pownall Brocklehurst, and Mr. John Henry Briggs. These gentlemen are all connected with the staple industry of the town.

Newlay, Leeds.

On Sunday morning a fire broke out at the Airevale Dyeworks, belonging to Messrs. Whittaker Brothers and Co., dyers. A considerable quantity of valuable goods and much machinery were destroyed, and the building itself suffered extensively. The damage is estimated at £20,000, which sum is covered by insurance. The fire is supposed to have started in the drying-room. It spread with great rapidity to the tentering-room, and thence to the press-room. The whole of these buildings were stocked with a large and valuable assortment of goods and a quantity of machinery. The contents of the building were destroyed, with the exception of a quantity of silk pieces, etc., which were got out by the workpeople, and piled in the yard. The building where the fire began is surrounded by several other very large store-rooms, and the rooms in which the dyeing was carried on were stocked with a large quantity of silk and stuff goods and valuable machinery, which was also saved. About 400 men will be thrown out of work.

Nelson.

The ceremony of christening the steam fire engine purchased by the Nelson Local Board was publicly performed on Tuesday evening by County Councillor Hartley, in the presence of a large number of spectators. The new engine was named "Lord Nelson." Previously to its arrival at Nelson the town was without either steam or manual engine.

A well-attended meeting of weavers was held on Tuesday night in the Co-operative Hall, Nelson, to consider the question of nominating labour candidates for the first Town Council election, to be held on November 3rd next. It was unanimously decided to nominate Mr. Thomas Lord and Mr. William Ward, president and secretary respectively of the Nelson Weavers' Association, and Mr. Tattersall, of Scotland-road, another member of the association. The meeting also pledged itself to support all independent labour candidates. Walverden, Whitefield, and Netherfield wards will probably be the ones selected by these candidates.

Nottingham.

Owing to the chronic depression in the Levers branch of the lace trade, considerable apprehension is not unnaturally felt as to the commercial future of the town, and this is finding expression in the columns of the local newspapers. The necessity of the introduction of some new industry into Nottingham is dwelt upon by various correspondents, one of whom suggests that, instead of the lace machine holder having to go to Lancashire for his yarn, spinning and doubling mills should be established in Nottingham, and thus afford considerable additional employment for the population. There are, however, obvious difficulties in the way of the carrying out of such a scheme. The convening of a town's meeting to discuss the whole question is generally recommended by the correspondents.

Oldham.

Mr. Wm. Smith, engineer at the Hopkin Mill, has been appointed to a similar position under the Clough Spinning Company.

Mr. John Chadwick, of the Clough Mill Company, Lees, has been appointed engineer of the Albion Mill Company, Hollinwood.

A new boiler is being put in at the Lees Union Mill Company during the stoppage next week for the Wakes holiday.

Mr. Joseph Law, employed at the Rushbank Mill, Chadderton, has been appointed one of her Majesty's inspectors of factories.

Mr. J. Robinson, late of the Industry Mill, has been appointed salesman at the Oldham and Lees Spinning Co.

The steam engines of the Beal Mill Company, Shaw, were started for the first time on Saturday. Cotton is being passed through the machines in the preparatory processes.

Mr. William Smith, engineer at the Hopkin Mill, Lees, is transferring his services to the Clough Mill Company. The retiring engineer, Mr. Chadwick, is going to the Albion Spinning Company, Hollinwood.

Mr. Bradbury, manager of the Beal, has accepted the post of manager at the Textile Mill Company, *vice* Mr. Waller, who goes to superintend the premises of the Eagle Mills Company, at Lowerplace, Rochdale.

Messrs. Urmson and Thompson, engineers, Ashton-road, Oldham, have been entrusted with the carrying out of the repairs in connection with the steam engines belonging to the Broadway Spinning Company.

The Neville-street Mill is working up preparatory to stoppage and being taken over by a limited company which is in course of formation for that object. The mill is fireproof, and contains about 45,000 spindles. Prospectuses will be issued shortly after the Oldham Wakes holidays, which commence to-day.

We understand that the question of widening the No. 1 mill of the Sun Mill Company so as to obtain longer and more modern mules, is again being raised. When the question was up previously no decisive steps were taken regarding it, but the "new blood" on the Board are now pushing the matter forward, so that something is likely to come of it.

About 30,000 spindles at the mills of the Melbourne Spinning Company are shortly to be stopped for several months. This is necessitated in consequence of the extensive alterations which are in contemplation—namely, the widening of the mill, lengthening of the mules, re-arrangement of the shafting, and the placing in of a pair of new steam engines, etc.

On Friday night of last week the mills in Oldham and Lees stopped for the holidays until Monday morning week. To-day the great exodus of the operatives will commence, and there are few places on the English and Welsh coasts but will receive visits from them, as well as the Continent and the Isle of Man, while the Isle of Wight and the south coast will be patronised very largely, especially the former.

Mr. James Henthorn, salesman of the Duke Spinning Company, and chairman of the Beal Mill Company, has been appointed manager of the latter concern, in place of Mr. Bradbury, who has accepted a similar appointment under the Textile Mill Company. Mr. Frederick Beattie has been appointed carder at the Duke Spinning Company, in the vacancy created by Mr. J. W. Hanson, who has accepted a situation abroad.

A mishap has occurred in connection with the new water lodge arrangement of the Glodwick Spinning Company by which the banking of the old lodge gave way, thus causing a stoppage of the mill for two or three weeks. A new lodge was being made and the company would thus have two reserves. Since the accident, however, it has been suggested to make both lodges into one, which will give a capacity of 1,500,000 gallons. The directors have decided to make the two lodges into one, and the work is being proceeded with as quickly as possible. At the meeting of the shareholders of the Glodwick Spinning Company, on Thursday night, the chairman (Mr. S. Littlewood) stated that the directors were assured the work in connection with the making of the lodges would be completed to allow of the mill re-commencing work immediately after the Wakes holidays.

Ossett.

About 150 workpeople in the employ of County-Council Alderman Mr. J. J. Mitchell, spent a very pleasant day at Scarboro' on Saturday last.

Preston.

On Saturday afternoon a fire broke out at the weaving shed in Fylde-road, occupied by Mr. Ed. Hayes, of Lytham. Pending the arrival of the brigade, a number of Mr. Leese's employés (whose mill is opposite) had broken into the premises, and poured a considerable quantity of water upon the burning mass, and by the time the brigade arrived the outbreak had been subdued. The damage was confined to the engine house, although the flames did make their way to the weaving shed, where some little injury was done. The damage amounts to £100 (insured).

The plans and elevation of a new spinning mill which it is proposed to erect in Preston, in the neighbourhood of New Hall-lane, have been prepared by Messrs. Stott and Sons, of Manchester and Oldham. Negotiations for the erection and working of the mill are not yet complete, but the matter is in the hands of several gentlemen who desire to see the mill started. It is proposed to construct the works of red brick, five storeys high, to contain about 80,000 spindles (part twist and part weft). Medium counts are proposed to be spun, but the machinery is to be adapted for changing to finer counts if required. Rope driving will be used, and everything connected with the working of the mill is to be of the very best.

At the Preston County Court, on Tuesday, before Judge Coventry, Thomas Law, a mechanic, sued Messrs. Hartley Bros., cotton spinners, Shelley-road Mills, to recover £3, the amount of a fortnight's wages in lieu of notice. The plaintiff had been five years in the employ of Messrs. Hartley. It was stated in evidence that two or three weeks ago the plaintiff, who had been working at the mill all Monday and Tuesday, and till three o'clock on the Wednesday morning, was instructed to call at Messrs. Stephenson's foundry for a piece of machinery on the Thursday morning, but through sheer exhaustion slept too long, and the article was fetched and put in its place by someone else. When he went to the mill he was discharged. Mr. Schofield, the manager, said the plaintiff had risked the stoppage of a mill of 40,000 spindles, and he produced the rules, one of which was to the effect that any one refusing to obey orders would be dismissed without notice. His honour said the defendants were not justified even by that rule in discharging the plaintiff, for whom he gave a verdict.

Rochdale.

On Wednesday morning Messrs. John Stott and Co.'s flannel mill at Wardle was discovered to be on fire. This mill consists of two buildings, joined together, one about 25 yards long and 20 yards wide, and the other about 30 yards long and 10 wide. Both are three storeys high. The drying-room, where the fire broke out, is in the middle, two storeys high. A weaving shed and a woollen shed adjoined. The whole of the buildings contained 40 rooms, and were filled with woollen material and machinery. The donkey engine belonging to Messrs. Bamford Brothers, of a mill adjoining, was got to work, and also hosepipes from Lowflat and Lodge Mills. The Rochdale brigade and Buckley Mill brigade shortly afterwards arrived, but notwithstanding the large volumes of water thrown upon the flames, the main portions of the building were entirely gutted. The weaving shed and the woollen shed were saved. The damages are estimated at £35,000, partly covered by insurance. A member of the Rochdale Corporation brigade was struck by a falling spout and seriously injured. The origin of the fire is attributed to the drying-room becoming overheated. About 250 workpeople were employed.

Royton.

The following is the list of pupils at the Royton Village School who have passed the examination in Cotton Spinning in connection with the City and Guilds of London Institute:—Ordinary grade, class I.: Ernest Kershaw and Edward Heywood; class II.: Kay Meller, Ralph Standfield, Thomas Smith, and Albert Slater.

Sudbury.

The Suffolk mat weavers working in the towns of Sudbury, Glemsford, Haverill, Lavenham, Hadleigh, and Long Melford have, during the last ten days, been arranging for an all round advance of 15 per cent. Several enthusiastic meetings have been held by Mr. John Williams (National Federation of All Trades and Industries), at which the men deter-

mined to cease work unless their demands be conceded. The masters, however, have unanimously offered 10 per cent., but with this advance the weavers are not satisfied, and a strike will possibly ensue. At a meeting of the masters to be held in Sudbury, Mr. John Williams, on behalf of the Suffolk matmakers, and Mr. Adams, of the London Matweavers' Trade Society, have been deputed to attend to state their case. The London Matweavers' Trade Society has passed a resolution pledging financial support in case of a strike. The employers and employés engaged in the mat-weaving industry are seriously handicapped by the competition of prison labour. Several delegates will attend the coming Trade Union Congress, and bring this grievance before that assembly. Mr. Williams has been approached as to whether he would care to be a Parliamentary candidate for the Sudbury Division of Suffolk, in the interests of labour, but has not yet come to any decision.—*Later*: Mr. S. H. Horton, chairman of the Suffolk Masters' Mat and Weaving Association, writes: "An amalgamated meeting of masters and men in the mat-weaving industry in Suffolk was held on Wednesday at Sudbury. An offer of 10 per cent. advance in wages was offered the men, and this, after some discussion, was accepted. The threatened strike has, therefore, been averted."

Todmorden.

Mr. W. A. Sutcliffe, partner in the firm of Messrs. W. and J. Sutcliffe, was married on Wednesday to Miss C. S. Wrigley, eldest daughter of Mr. T. Wrigley, manager for Messrs. Fielden Bros., Limited. The presents were costly and numerous, including one from the employés of the bridegroom.

SCOTLAND.

Aberdeen.

The death occurred here on Wednesday, somewhat suddenly, of Mr. Thomas Carnelley, professor of chemistry at Aberdeen University. Mr. Carnelley was a son of Mr. William Carnelley, chairman of the directors of Rylands, Limited, and a native of Manchester. He paid a visit to his parents, at Manchester, a week ago last Saturday, and while returning to Aberdeen the following Monday was seized with illness in the train, and died as stated, in his 40th year. A distinguished and promising scientific career is thus prematurely closed. Professor Carnelley received his early education at Bonn, in Germany, and at Owens College, Manchester. He was a B.Sc. of the Victoria and a D.Sc. of London University. He was also elected to a chemical chair at Firth College, Sheffield, on the foundation of that institution, and subsequently held a similar appointment at Dundee University. Two years ago he was chosen, out of a large number of candidates, for the important office of professor of chemistry at Aberdeen University, and held the position till his death. He was the author of a work entitled "Physics, Chemical Constituents and Tables," published in 1887. Professor Carnelley leaves a widow and four children.

Dundee.

An order for a very large turbine has been placed with Messrs. Thomson, Son, and Co., of this town. It will be used for driving a textile factory abroad.

Darvel.

For the past three weeks the carpet weavers here have been on strike against a practice of the employers of deducting fines from the men's wages for damaged work. On the 2nd of August the sum of 10s. was deducted from the wage bill, and the men have not worked since. On Monday Mr. Keir Hardie addressed a meeting of the men, and afterwards had an interview with Mr. Alex. Morton, the head of the firm of Messrs. A. Morton and Co. The result of the interview was the drawing up of an agreement, in which the firm agreed that in future cases of damaged goods shall be submitted to a council of three appointed by the men, and should the firm not accept their decision the dispute must then be referred to a third party, whose decision shall be final and binding on both parties. The money deducted from the men's wages on 2nd August is to be paid over to a public institution. On Mr. Hardie reporting these terms to the workmen they were at once accepted, and the strike declared at an end. In the evening a public meeting was held in the square, Mr. Walter Forbes presiding. Mr. Keir Hardie spoke on the principles of trade unionism, after which it was unanimously agreed to form a union for the factory workers of the district, male and female.

Kirkcaldy.

The floorcloth and linoleum trade of Kirkcaldy is still very busy, the demand for delivery being unusually pressing for this season of the year.

The printers employed at the large works of the Kirkcaldy Linoleum Company struck work on Monday morning. The Company having newly carried out considerable additions on their premises, and being short of hands, brought down a number of calico printers from England. The workmen's Union objected to these men being paid the same rate as themselves, and insisted on their serving an apprenticeship. A correspondence took place between the Union and the employers, with the result that the old hands struck work:—*Tuesday*. The strikers returned to work to-day, the employers having acceded to their demand.

Kilbowie.

The extensive sewing machine establishment of Messrs. Singer and Co. is very active at present, and likely to continue so for some time. Demonstrating this fact, it may be mentioned that last week those engaged in the works at Kilbowie numbered no fewer than 6,106—the greatest number in the history of the firm. Last year the average number employed was 5,900. Overtime has had to be resorted to in some of the departments.

Paisley.

Applications for shares in the Messrs. J. and P. Coats' works have been made to the amount of fifteen millions, or three times the amount asked. The employés who have applied for shares are to receive every consideration.

Messrs. F. Pearn and Co., of West Gorton, Manchester, have completed large and specially designed pumping engines for Messrs. J. and P. Coats, Limited. The pumps will be used in connection with the firm's system of cooling their condensed water. The engines are of the vertical compound condensing type. The pumps have been tested and have proved in every way satisfactory, being capable of raising jointly one million gallons per hour. The engines were made under the superintendence of Mr. Morton, Messrs. Coats' engineer.

Textile Markets.

REPORTED BY OUR OWN CORRESPONDENTS.

COTTON.

MANCHESTER, FRIDAY.

It is now clear that Liverpool speculators in dealing with raw cotton this year have been completely outwitted. Great confidence was entertained amongst them until quite recently that prices would be driven much higher than has been the case. But the very low point to which the trade has restricted its operations during the past two or three weeks begot an uneasy suspicion in the minds of the bulls that they had miscalculated the amount of reserves in the hands of the trade. This, coupled with the growing and unusually large movement of the new crop in the States, made their prospects look dark in the near future. It proved almost to demonstration that the little event they had laboriously prepared would not come off according to their anticipations. Hence the stampede, the frantic efforts to unload to avoid further loss, and the general tumble down of prices both in futures and spots. The result is that all the castles in the air built by speculators have collapsed, and will not be reconstructed this season. With the forces at work it is very probable that prices will descend lower, as 6¼d. for middling American, at which it stands at the moment of writing, is decidedly a price beyond the intrinsic value, one that would allow spinners and manufacturers a chance of making little profit upon their labours, 5¾d. would be nearer the mark. With the early collapse of the speculative bubble, the trade will have pleasanter times until the end of the year than was the case last season.

COTTON.—The panic amongst the dealers in futures to which we referred last week, reacted strongly upon the spot market, and late on Friday afternoon Americans were reported ¼d. lower. Momentarily a slight stimulus was given to the action of buyers, and the sales of spots went up to 7,000 bales. Confidence, however, was not restored; futures continued quite unsettled until Tuesday, when another heavy fall occurred, bringing spots down ¼d. further. On Wednesday, the market opened with a decline of 1 point in futures and further eased a little during the day. New York reported another decline of 8 to 10 points for Augusts and 1 point for other positions, but this was almost entirely recovered during the day. Yesterday the market slightly improved both for spot and futures, the latter recovering after several fluctuations 2 to 3 points over the day before. New York cabled an advance of 4 points for September and 1 for more distant positions, while a later wire (received after the Liverpool market had closed) reported it easy at a decline of 2 to 3 points. Brazilian spot was reduced $\frac{1}{16}$d. yesterday.

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

	Import.	Forw'ded.	Sales.	Stock.	Actual Export
American	20,263	30,218	29,250	314,170	851
Brazilian	1,285	348	520	35,760	—
Egyptian	1,085	1,394	1,240	37,840	109
W. Indian	1,909	497	560	9,820	349
E. Indian	200	2,430	3,190	249,700	455
Total	23,942	34,887	34,760	647,290	1,764

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

	G.O.	L.M.	Mid.	G.M.	M.F.
American	6*	6⅛*	6¼*	6⅜	6⅝

	M.F.	Fair.	G.F.
Pernam	6 15/16	6 15/16	6 15/16
Ceara	—	6¼	6 5/16
Paraiba	—	6¼	6¼
Maranham	—*	—*	—*

	Fair.	G.F.	Gd.
Egyptian	6 13/16	7 1/16	7 5/16
Ditto, white	—*	—*	—*

	Fr. F.	F.G.	F.G.	Gd.	F.G.	Fine
M.G. Broach	—	—	—	5 5/16	5 9/16	5 13/16
Dhollerah	3 11/16	4 1/16	4 5/16	4 5/16	4 5/16	4 13/16	5 1/16
Oomra	4 5/16*	4 7/16	4 7/16	4 7/16	4 7/16	5 1/16	5 5/16
Bengal	—	—	3 7/16	3 9/16	3 13/16	4	4 1/16
Tinnivelly	4 1/4*	—	5	5 1/4	5 1/2	—	—

* Nominal.

YARNS.—As might naturally be expected from what is stated above only a very small trade in yarn has taken place in any department. In the existing conditions neither manufacturers nor exporters have cared to purchase more than their necessities compelled them, and as both parties are still fairly well provided for this amount is reduced to very small dimensions. The heavy falls in the raw material given above caused an almost total suspension of business on Tuesday, and confidence has by no means as yet been restored. Hence only the most trifling business has been passing at any time since last week in any department of the yarn market dealing with the American article. On Wednesday it was evident that producers were differing considerably in their views, as a good deal of irregularity was manifest, some spinners offering to sell freely at lower rates, whilst others were indifferent and trusted to the coming stoppage of spindles in Oldham for a week to impart strength to yarns. Yesterday a slighter better demand was experienced

CLOTH.—The transactions in cloth have been very few and small, if we except therefrom some rather heavy ones in shirtings for future delivery. Little has been done on Eastern account. The inquiry for Burnley printing cloths is small and at unremunerative rates. As the week progressed a slightly fuller inquiry arose for various descriptions, but it did not lead to much more than a retail business in any particular article.

WOOLLENS AND WORSTEDS

BRADFORD.

Prices of English wool are still unsatisfactory; the demand has been slightly brisker, but with such a weak feeling prevalent, staplers feel discouraged and do not care to push sales until more remunerative rates are offered. Mohair and alpaca are steady. The worsted branch has a better tone. Spinners are slightly busier, especially on two-folds, and were it not for the low offers made a much larger trade would be put through. There is still nothing new in the piece trade. The home demand is just about steady, but there is no great amount of activity in the stuff warehouses. As yet the demand for the States is comparatively suspended on account of the proposed new duties. Manufacturers' prices are generally without change. For China there has been rather more doing. South American purchases are, practically speaking, *nil*.

HUDDERSFIELD.

Home, Colonial, and Continental buyers were in the market on Tuesday, and good lines were booked by manufacturers. Adverse meteorological influences act as a check, of course, but despite this circumstance, the looms are well employed. The United States are not operating up to the usual average for reasons which are well understood. Canada, however, has come forward more prominently, and the Continent has not been backward. Fine fancy worsteds and new styles in serges have been enquired for as largely as any other class of goods in the market.

ROCHDALE.

The reports from the mills shew that business is still small, extensive operations being the exception. Purchases are of a hand to mouth character, previous quotations being adhered to. This is discouraging, as merchants, it is well known, are now very busy.

LEEDS.

Both home trade and shipping houses have been quieter this week. For export extensive orders were placed a short time ago, and until deliveries are made on account these further commissions are not looked forward to. Tweeds are not moving at all briskly, and short time is actually being suggested as a set-off to the present state of things. Worsted coatings are rather brisker, but plushes and seals are slow in comparison with the demand last week. New spring patterns in serges have gone off well, and Cheviots have been brought out in such attractive designs that hopes are entertained of a considerable improvement in this section of the trade. Medium suitings and overcoatings are dull.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 26th August, say:—

WOOL.—Since the public auctions last week there has been little new business passing in the wool market. The tone, however, is steady and recent prices are maintained.

SHEEPSKINS.—The supply continues a full average, and largely of good sorts. An active competition is maintained, and prices are firm.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, 27th August, 1890.

Yesterday there was a better feeling in our market, and sellers are firm, refusing to make any further concessions in price.

Jute is quoted at £12 10s., say 5s. a ton of an advance on firsts for shipment, September-October steamer to Dundee. There has been a good deal doing at a rise of say 2s. 6d. per ton. Calcutta wires firmer prices, but America does not encourage shipments of goods at any advance.

Yesterday, therefore, spinners were unable to make any higher prices for their yarns, except to buyers, who were compelled to take a few. For 8lb. cops the price is 1s. 3½d., with buyers over.

Hessians are a shade firmer. Manufacturers say that there is now no margin of profit. High wages, costly stores, and charges, compel them to increase their weaving rate, and they say that it is not possible to make Hessians without loss. For common Dundee, 10½ oz., 40in., the price is 1 11/16d., and only the best goods bring a higher rate. For fine Hessians, with colour, extreme prices are paid, especially in the wider widths.

Flax is firm, and is, while not higher in quotation, not quite so easy to buy. This remark applies especially to St. Petersburg brown flax.

Flax yarns are not lower, but it is difficult to get any rise in price. Wet spuns are indeed firmer, but this is not an important branch of the Dundee trade.

Tow yarns are still very cheap, especially common wefts.

Linens are quiet, but the feeling that the bottom prices have been reached gathers strength.

Dundee fancy jute goods are in fair demand, and makers of cords and twines are all very busy.

MANCHESTER.

The demand for fancy articles suitable for the extensive trade, which sets in during the period immediately preceding Christmas, has commenced, although not as yet to any considerable extent. The damask section is one of the first to feel the impulse arising from this demand, and manufacturers have prepared some excellent designs in anticipation of the season's requirements. Floral and geometrical effects are as heretofore to the front, but in detail important changes have been made. The range of plants, flowers, and even cereals, upon which the designers have drawn for inspiration, is vast, the chrysanthemum, the pansy, the shamrock, together with wheat and barley, being included amongst the woven pictures to be seen in the pattern books. Great hopes are entertained with regard to the trade this year. Coarse makes of linens are slow. Linen threads move off steadily at the prices established two years ago.

SILK.

LONDON.

THURSDAY.—London Produce Clearing House quotations of best 5¼ Tsatlee: August 12s. 2d., September 12s. 4d., October 12s. 4d., November 12s. 5d., December, 12s. 6d., January, 12s. 6d., February, 12s. 7d., March 12s. 8d. per lb. Sales registered, nil.

DRY GOODS.

MANCHESTER.

There has been a change for the better in the character of the demand since the publication of our last report, certain classes of heavy goods, which are usually inquired for at this season, having been in demand. Towards the beginning of September it is anticipated that there will be a much brisker movement, as new season's goods of various descriptions will then be on the market. Carpets are unchanged. There has been some talk of still another improvement in the production of these articles by a Heckmondwike firm, but details have not been forthcoming. Curtains continue to move steadily, and plushes, judging from the present condition of the trade, still maintain their previous popularity. Shipments of Bradford stuffs have been chiefly to the Chinese market. The South American demand for these, as for other articles of export, is, practically speaking, nil. Hosiery is quiet. The silk and cotton mixtures known as "cut-ups," and which are used for men's ties, are selling largely. They are made in Macclesfield, but the principal portion of the demand is supplied by German manufacturers.

HOSIERY AND LACE.

NOTTINGHAM.

Yarns are being bought but sparingly, as manufacturers have not sufficient orders on their books to justify them in laying up stocks. Brown nets have been sold to a moderate extent, but fancies, on the whole, are dull. The Levers' department, with regard to which bright hopes were entertained last year, has not revived, and its present condition is calculated to produce a feeling of deep despondency to all well-wishers of the town. Imitations of the old-fashioned real thread lace have been produced. Point de Paris and Point de Venise laces have been sold, but there is not much doing. In silk fancies, Chantillies continue to be the favourites. Veil, Russian and costume nets are still in request. Plain nets are unchanged.

LEICESTER.

The wool market is firmer. The aggregate turnover is not heavy, but the numerous small transactions give the market a more cheerful tone, while holders are indifferent to business unless their demands are conceded. Lustre and demi-lustre wools of the finest growth are most in favour and firmest in price. Heavy speculation is avoided, and the operations are sound, regular, and healthy. Colonial wools sell steadily to meet actual requirements, and prices are more regular. The yarn market is in a fairly healthy condition, and although new contracts are at low rates, spinners find more business offering. Cashmere yarns sell steadily, and a more satisfactory trade is doing in lambs'-wool yarns. The hosiery trade improves steadily all round, whilst in some of the leading branches much greater activity prevails, and there is every indication of a full autumn and winter trade. The boot and shoe trade is much brisker; deliveries are increasing and production is being extended. Elastic web fabrics sell freely for home, American, and Continental markets.

THE KIDDERMINSTER CARPET TRADE.

The tone of this trade is generally healthier than for some weeks back, but business continues somewhat slack. During the past week rather more enquiries have come to hand from home buyers, but it is too early yet for transactions of importance to be carried out, and business resulting is simply in the nature of trials. At the present time only a few travellers are out, but in another month all of the firms will be represented on the road, and buyers will then have a better chance with all the new samples and patterns before them of making their selections. In the shipping department of the trade, orders have been arriving rather better lately, and some good consignments are being made to the Scandinavian markets, but business is still far below the average compared with other years, and, taken all round, what with the failure of the South American trade and the very material falling of in the demand for Australia, the present season has been the most disappointing known for some years.

In the wool market, although there is not much request, prices remain pretty firm, and the feeling seems to be that with an increase in transactions values must advance. Spinning machinery is kept going fairly well in working by old contracts. Up to the present manufacturers in the main have confined themselves to enquiries, and few new orders have been placed.

Cotton yarns are exceedingly firm at top rates, and spinners talk of a further advance before long, and this is tending to a little business.

Joint Stock and Financial News.

COTTON COMPANIES' DIVIDENDS.

NORTH MOOR,—Profit, £1,430. Dividend, 10 per cent.

GLADSTONE (Failsworth): Profit three months, £940. Dividend, 1s. 4d. per share of £3 10s. paid, which will absorb £924. Share capital, £48,542. Loans, £38,564. Spindles, 86,372 (19,904T, and 66,468W). Plant three months ago, £64,440. Company formed 1875.

INDIA MILLS SPINNING COMPANY, DARWEN.—The report on the past half-year's working of this company shews a profit of £2,308 3s., which, after allowing £695 15s. for an adverse balance, leaves £1,612 4s. available for disposal. Out of this it is recommended to pay a dividend of 1s. 4d. in the pound, which will absorb £1,447 13s., and to carry the balance of £164 10s. to the credit of the next account.

Gazette News.

ADJUDICATIONS.

Edward F. Mahony, London-road and Pudsey-street, Liverpool, woollen merchant, etc.

Randle Cresswell, residing at Woodborough-road, lately trading at Sim's factory, Sherwood-street, Nottingham, lace manufacturer.

RECEIVING ORDERS.

Philemon Brooke, Moreplesant, Outlane, near Huddersfield, linsey and serge manufacturer; Huddersfield.

Thos. B. Wallis, Upper Wellington-street, Long Eaton, lace manufacturer; Derby.

Randle Cresswell, residing at Woodborough-road, lately trading at Sim's Factory, Sherwood-street, Nottingham, lace manufacturer; Nottingham.

PARTNERSHIPS DISSOLVED.

Dawson and Co., Fulledge Mill, Burnley, shuttle manufacturers.

Holden and Priestley, Bradford, wool and waste dealers.

Towlson and Weldon, New Basford, Nottingham, dyers and bleachers.

WINDING-UP NOTICES.

The American Heald Company, Limited, Punch-street, Bolton.

Patents.

APPLICATIONS FOR PATENTS.

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

Where Complete Specification accompanies Application an asterisk is suffixed.

18TH TO 23RD AUGUST.

12,907. E. SYKES, D. SYKES, E. HEPPENSTALL, T. GREENWOOD, and J. W. WHITELEY, Market-place, Huddersfield. Machinery for scouring, dyeing, and drying hanks of yarn, slivers of fibre, and slubbings.

12,929. J. A. WOOD and G. WALKER, 24, Chester-square, Ashton-under-Lyne. The improvement in self-acting mules of a scroll with three grooves to hold a rope without a knot.

12,950. H. THIES and E. HERZIG, 142, Fleet-street, London. Bleaching.*

12,962. B. WILLCOX 47, Lincoln's-inn-fields, London. Nitroso combinations, and colouring matters therefrom. (*Farbenfabriken vormals F. Bayer and Co.*, Germany.)

12,972. E. PEERS, 70, Market-street, Manchester. Cords and similar fabrics.

12,985. J. WORMALD and G. WASHINGTON, Commercial-street, Halifax. Shedding motion of looms.

12,996. E. EDWARDS, 35, Southampton-buildings, London. Self-acting mules. (*R. Schneider*, Austria.)

13,000. J. SHINN, 97, Newgate-street, London. Printing fabrics.

13,010. W. MAJERT, 45, Southampton-buildings, London. Colouring matters.

13,043. A. Schmid and Koechlin, 323, High Holborn, London. Humidifying air.*

13,048. S. Pitt, 24, Southampton-buildings, London. Dyeing apparatus. (*A. Smith and Sons' Carpet Co., U.S.*)*

13,072. R. Harper, 70, Wellington-street, Glasgow. Comb for leasing webs in tape dressing, and in short chain beaming machines.

13,073. N. Hopwood, 4, St. Ann's-square, Manchester. Ribbed pile fabrics.

13,079. G. Gawthorpe, 8, Quality-court, London. Measuring piece goods and fabrics in looms.

13,098. W. T. Stanley and W. A. Wass, 45, Southampton-buildings, London. Needles for jacquards.

13,124. E. Roff, 6, Livery-street, Birmingham. Shuttles.

13,157. G. Templer, 12, Bedford Row, London. Hosiery.

13,165. J. R. Geigy, 89, Chancery Lane, London. Mono and disulpho acids of tetramethyldiamidodiphenylmethan.

13,184. I. F. Peck, 45, Southampton Buildings, London. Apparatus for dyeing yarn.

13,192. W. D. Watson, 4, St. Ann's-square, Manchester. Raising the pile of woven fabrics.

13,202. J. T. M. Hircock, 257, Bloomsbury-street, Nechells, Birmingham. Gearing for gaining speed with less power, in driving any kind of machinery.

13,208. H. M. Girdwood, 17, St. Ann's-square, Manchester. Humidifying and regulating the atmosphere in factories.

13,217. H. Redgate, 134A, Queen's-walk, Nottingham. Lace dressing frames.

13,235. B. Willcox, 47, Lincoln's-inn-fields, London. Azo dyes. *Farbenfabriken vormals F. Bayer and Co.*, Germany.)

13,272. W. H. Rhodes, 18, St. Ann's-street, Manchester. Preparing for spinning and spinning cotton, etc.

SPECIFICATIONS PUBLISHED.

1889.

13,665. Willcox (*Farbenfabriken vormals F. Bayer and Co.*). Colouring matters. 6d.

13,836. Deru. Wool washing machines. 6d.

13,952. Gessner. Spinning, etc., machines. 1s. 5d.

14,207. The Clayton Aniline Co., Ld., and others. Colouring matters. 6d.

14,230. Willcox (*Farbenfabriken vormals F. Bayer and Co.*). Colouring matters. 6d.

15,432. Marsden and Pickard. Condensers for slivers of wool. 6d.

15,455. Gee. Hank dyeing machines. 8d.

15,666. Craig. Cloth stentering, etc., machines. 8d.

16,518. Jardine. Lace-making machines. 6d.

1890.

5,784. Marley. Winding ribbons, etc. 8d.

6,004. Fisher and Avis. Braiding machines. 8d.

6,750. Farran and Crawford. Looms. 1s. 1d.

8,389. Remy and others. Colouring matters. 4d.

9,296. De Pass (*Imbs*). Spinning frames. 6d.

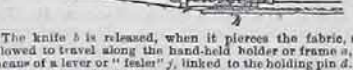
Second Edition.

1889.

655. Schott. Looms. 8d.

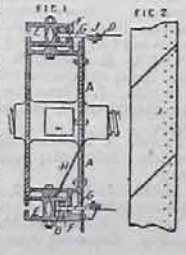
ABSTRACTS OF SPECIFICATIONS.

5,455. March 20, 1889. **Cutting weft-pile fabrics.** W. Gadd, 64, Barton Arcade, Manchester, and O. Dery, 10, Newton-street, Piccadilly, Manchester



The knife *b* is released, when it pierces the fabric, and allowed to travel along the hand-held holder or frame *a*, by means of a lever or "feeler" *f*, linked to the holding pin *d*. A pawl *k* and ratchet bar may be provided for the convenient withdrawal of the knife at any time. A modification for a fixed knife holder is described. [8d.]

5,459. March 20, 1889. **Tentering or drying fabrics.** J. and W. Hoston, Copley, near Halifax.

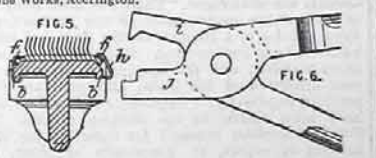


An extended partition A (Fig. 1) is provided at the inner side of each chain race R to prevent grease and dirt from coming in contact with the fabric D, and the chains F are extended at G to correspond. A guide plate H prevents grease and dirt from dropping upon the bottom race. The rails E are formed with two or four recesses or races to make them reversible. The joints of the plates J are made as shewn in Fig 2. [6d.]

5,499. March 30, 1889. **Loom pattern chains.** K. Jowett, 2, Clement-street, Snakehill Lane, Girlington.

The pegs *d*, formed with heads *d*1 are held in countersunk holes in the lags *a*, and one or two rows are retained by a slide strip *b* inserted in a dovetail groove as shewn. The pegs are made to taper towards the top, and may be hollow and of metal and provided with wooden plugs for acting on the required parts in the looms. [6d.]

5,540. April 1, 1889. **Carding-engines.** E. Tweedale, Globe Works, Accrington.

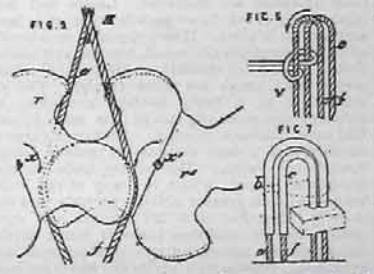


Hats.—The raw edges of the card clothing are encased with metal strips *f*, which are either notched at intervals or arranged in lengths with spaces between in order to allow the hooked fasteners *h* to lie flush with the said strips. The fasteners are formed of metallic T-pieces hooked at both ends, the upper hook being first placed on the metal edging, and the lower hook then forced into position over the rib *b* by a pair of tongs having a single upper jaw *i* and a pair of lower jaws *j*, which are recessed as shewn. The upper edges of the flat are bevelled to allow space for the thickened edges *f*. [8d.]

5,549. April 1, 1889. **Dyes.** O. Imray, 28, Southampton Buildings, Middlesex.—(*Farbwerke vormals Lucius, Meister and Bruning; Hoechst-am-Main, Germany.*)

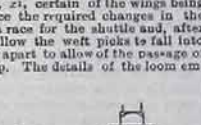
Malachite green series.—Relates to the manufacture of green and bluish green colouring matters, and consists in applying the processes described in Specification No. 12,793, A.D. 1888, for producing further derivatives of metaoxydiamidotriphenylmethane. Consists, firstly, in the manufacture of metaoxytetralkyldiamidotriphenylmethanes by acting with nitrous acid in the manner described in the above-mentioned Specification, upon the corresponding metamido leuco bases, containing methyl, ethyl, and benzyl groups, in combinations different from those referred to in the previous Specification. Consists, secondly, in the production of these metaoxytetralkyldiamidotriphenylmethanes in the manner described in the previous Specification, by the action of benzaldehyde upon molecular proportions of two different tertiary aromatic amines. Consists, thirdly, in producing sulphonic acids of the leuco bases obtained as above, by treatment with sulphuric acid in the manner described in the former Specification. Consists, lastly, in producing acid colouring matters by oxidising the sulphonic acids in the manner described in the former Specification. [6d.]

5,560. April 1, 1889. **Weaving Turkey carpets, etc.** R. Baron von Seydlitz, Munich, Bavaria, Germany.



The warp threads *e*, *f*, pass upwards through pairs of guide tubes *b*, *c* (Fig. 7), and thence downwards to the shedding mechanism. The tuft yarns are passed between and around the warp threads, as shewn by the dotted line, and the loop portions are slid over the tops of the tubes and b ought down to form the knot, as in Fig 6. The tufts are then seized between a pair of bars and drawn down along the warp to the fabric, and cut off. Shedding is effected by wing discs *r*, *r*1 (Fig. 9), turning on shafts *x*, *x*1, certain of the wings being displaced laterally to produce the required changes in the shedding. The wings form a race for the shuttle and, after each passage of the latter, allow the weft picks to fall into place. The discs are moved apart to allow of the passage of the pile knots along the warp. The details of the loom employed are described. [1s.]

5,569. April 2, 1889. **Looms.** H. Hartley, Garden View, Nelson, Lancashire.



Picking mechanism.—The picking bowl P is mounted on the conical end of a cast-iron stud A which is held on the square part C of the picking shaft by a set screw S. [6d.]

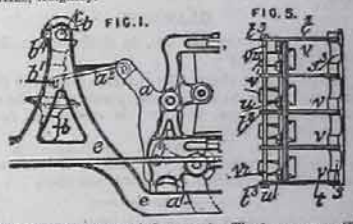
5,582. April 2, 1889. **Treating sisal hemp, etc.** A. W. Mowbray, University Buildings, Washington Square East, New York, U.S.A.

The fibres, which are in the first instance separated from one another by crushing the leaves in which they are contained, are, when dry, next passed through the ordinary cleaning and preparing machines for removing the pulpy matter. The fibres are then oiled. [6d.]

5,590. April 2, 1889. **Scouring and bleaching.** E. Pass, Technical School, Manchester, C. and A. Edmeston, Canon-street Works, Salford, and E. Grether, 5, Blackfriars-street, Salford.

Relates to a method of, and apparatus for, scouring, or cleansing, and bleaching textile fabrics, warps, and yarns of cotton or other vegetable fibres. Consists in passing the materials in rope or open form through apparatus in which they are alternately saturated in suitable solutions, and subjected to the action of steam at, or near, or above atmospheric pressure, and then finally treated with steam alone. The solutions employed are caustic soda, or caustic potash, or carbonate of soda or of potash, or resin in caustic soda or potash or in carbonate of soda or potash, or a mixture or any of these with lime. The apparatus consists of a chamber of cast or wrought iron provided with doors, water gauges, and safety valves. Near each end a partition extends from the top to near the bottom, forming a water seal with sufficient head of liquid to prevent escape of steam from the chamber. Steam is passed into the chamber and into a jacket at the top by pipes. Within the chamber are mounted rollers to guide the material, some of the rollers being of larger diameter, and having axles passing to the outside of the chamber and carrying pulleys whereby they are rotated. All the rollers are connected by a chain passing over chain wheels thereon, and over an adjustable tension wheel. The material enters the chamber at the left, traverses the liquid and steam spaces, and passes thence to squeezing rollers, and to the delivery roller. [8d. *Drawings.*]

5,599. April 2, 1889. **Looms.** R. L. Hattersley and J. Hill, Keighley.



Shedding mechanism and framework.—The lever arms *a* (Fig. 1) of a Hattersley's dobby are joined by rods *a*2 to sheddin*g* levers *b*, pendent from a shaft *c* on the gantrees *e*. The levers *b* are removable, and are kept in position by a bolt *b*4. The pins *b*1 are placed at different distances from the shaft *c* to produce the required shed. In the case of positive dobbies, lever arms *a*1 are connected by rods and levers, such as *b*, to the cords beneath the healds. The end frames, stays, and supports of the loom are arranged to allow of free access to the healds.

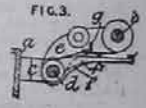
Shuttle boxes and change-box motions.—The shelves *t* (Fig. 5) are of sheet metal, bent projecting parts thereon being inserted in openings in the end stay pieces, and secured by set screws *w*, etc. The swellers *w*1 are mounted on projections on the shelves, other projections *t*1 carrying the guide pieces *w*2 of the swellers. Projections are also arranged to enter openings in and be riveted to a stay piece *x*3 forming a from shield for the compartments *v*. In the crank or lever mechanism of the box-operating apparatus the connecting pin is adjustable in the manner described in the next paragraph.

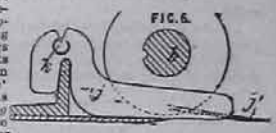
Linkwork.—In mechanism in which one rocking lever operates another, the connecting pin is adjustable by a screw, a lock screw being tightened. [1s.]

5,603. April 2, 1889. **Lace curtains, etc.** E. Doughty, Foxhall-road, Nottingham.

Several guide-bars are employed in curtain machines, and are traversed over a number of carriages corresponding to the number of guide-bars used, in order to produce an imitation of traversed bobbin net. Each warp thread is twisted twice or thrice round the end carriages of the series and once round the others. [6d.]

5,604. April 2, 1889. **Looms; pile fabrics.** G. A. J. Schott, Bradford.





Relates to improvements in the apparatus described in Specification No. 7,822, A.D. 1888, for producing velvets, plushes, and other cut weft pile fabrics. The cutter shaft *b* (Fig. 3) is mounted on arms *e* carried by a hinge-pin *d*, which is capable of rocking freely in bearings carried by brackets *c* on the breast beam *a*. To the arms *e*' or to separate arms *f*, is fixed a bar *g* which holds the race guides or cutter sheaths in position; a roller, bar, or plate prevents the ground cloth or race guide from rising to the cutters. The arms *f* carry a roller on ba*h*, over which the cloth passes, and which may be supported by extra arms *f*4. All the parts move about the hinge-pins in response to the up and down motions of the cloth. The shaft *b* is connected by gearing with a wheel on the pin *d*, and receives motion from a chain or driving band from the tappet or crank shaft. Any temples used should be attached to the hinge-pins or its arms. The hinge-pin may be moved positively in unison with the healds. The cutters, which are of very thin sheet steel, work between plates *j* (Fig. 6) hooked on to the plate *g*, and kept apart by a helical spring or coil *k*. To each plate *j* is secured the bent-up end of a wire *j*1 passing through the harness. In a modification the plates *j* are dispensed with, and the wires (preferably doubled) are hooked to a bar *g* or an equivalent. In some cases more than one cutter shaft may be employed. The back ends of the wires may be pressed through a reed or grating into a box, or they may be attached to rocking loaded levers. In the case of long pile goods the float is shortened by tying down the full float with single warp ends. By cutting at points away from the centre irregular pile can be obtained. In weaving ribbon, velvets, chenille, etc., circular cutters of large diameter sever the cloth into ribbons. [8d.]