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

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 Their names will not be published unless requested.

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THE NEW FACTORY ACT.

It may be well to make a note of the fact that yesterday (New Year's Day) the new Factory Act came into force. It is not likely that employers will be permitted to forget it for any length of time. It was avowedly sought and obtained for the purpose of being used as a weapon which could be applied with less expense than a strike by the trades-union leaders. By this time its clauses will no doubt have been fairly well conned, and manufacturers will, to some extent at least, have gauged their new responsibilities under its provisions. That the Act contains as many clauses that are unjust to the manufacturer as there are quills upon the porcupine's back, has long ago been demonstrated. That it has a few points of minor importance which will remedy some small and fancied grievances may be admitted, and as far as these go we trust it may have the desired effect. Amongst the latter must be reckoned in the main the so-called piecework clause. Everybody who knows anything of manufacturing knows that the force of competition leads to a gradual degradation of the fabrics manufactured: that warp and weft have a tendency to grow finer, widths narrower, and lengths shorter. This is not always the fault of the manufacturer: quite as often it is done at the instigation of the merchant, who cannot possibly buy what he wants at the limit to price given to him by his clients abroad. After much negotiation he may suggest the use of warp and weft two hanks finer in each case. The degraded fabric passes, and in turn becomes the standard, only in its turn to be subjected to a similar process. By this the counts have become four finer than those upon which the rate of payment to the weaver was originally calculated, while, probably, no revision has been made. Trades-unionists carry a story like this into the House of Commons, and, backing it with mysterious hints as to what will be meted out at the General Election to those who don't listen to them, evoke a great deal of attention and sympathy, while the technically ignorant men who serve the constituencies hold up their hands with a sensation of horror, and metaphorically exclaiming—"What wicked men these cotton manufacturers are!" forthwith proceed to enact the pains and penalties of the new law for them. Now let us take what is probably one of the worst cases that will be found, namely, the use of 36's twist, whilst paying the weaver for 32's only. Suppose a weaver is working four looms, and each is engaged upon cloth of this kind. For facility of illustration set down his earnings at 20 shillings per week, upon all of which he has been entitled to the higher rate. Writing from memory we believe the Blackburn Standard List provides that the weaver shall be paid an advance of one per cent. upon every 10 hanks finer that the warp yarn may go. One per cent. upon £1 is 2·60d., and two-fifths of this, which represents the four hanks, is 1·04d. upon a week's work for an adult, and upon £1 of earnings. Can any unprejudiced, unbiassed judge allege that on such a basis a just charge could be made against an employer of defrauding his operatives? Yet it is this sort of material upon which the new enactment has been obtained, and which has enlisted the effusive sympathy of Sir Henry James for the sufferings and oppression of the weavers. The manner in which that right honourable gentleman has permitted himself to be hoodwinked, if he has really done it ignorantly, would have been as good as a screaming farce, were it not that such serious and important interests are involved. We are glad, however, to know that the new Act has been considered at a general meeting of the members of the Manufacturers' Association, in order to arrive at some degree of understanding as to how its various clauses should be construed. All through, it constitutes a heavy addition to trammels under which the trade is compelled to work, without conferring upon those in whose interests it has professedly been passed a single corresponding advantage. It is a whip of scorpions with which the trades-union leaders mean to flagellate the employers in the cotton trade into perfect obedience to their wishes, not only on the matters of which the Act takes cognizance, but of all others.

THE REELING OF BUNDLE YARNS.

As the past year grew old it witnessed the maturing and settlement of a few important points in commercial ideas that had up to then been somewhat hazy as they presented themselves to the apprehensions of variously interested individuals. One of these related to the reeling of bundle yarns. What, in face of the very diverse practice in vogue, could be said to constitute a commercial hank of yarn? Not the theoretical standard of 840 yards, as there was nowhere any misconception of this; but the true commercial hank that in honour and honesty an upright dealer ought to give to a purchaser? It is gratifying to know that the recent discussion has practically settled the matter. A meeting has been held of the Special Committee appointed by the Board of Directors of the Manchester Chamber of Commerce, in response to an influentially signed memorial, to determine whether or not the hank of 840 yards is "a trade description." The question involved did not refer to the theoretical "hank," about which there is no difference of opinion, but to the reeling of bundled yarns in actual hanks. The Committee received evidence, with a view to enable it to arrive at a decision, at a meeting held on the 14th ult., as reported in our columns at the time, and on the 23rd ult., after a full consideration of this evidence, it was agreed that no further testimony was required, and the following resolution was adopted:—"That in the opinion of the Committee the hank of 840 yards of single cotton yarns, subdivided into seven leas of 120 yards each, is a recognised trade description, and that hanks of such yarn measuring less than 840 yards constitute a false trade description within the meaning of the Merchandise Marks Act of 1887." This resolution will be submitted to the Board of Directors at its next meeting. Thus we trust this annoying and troublesome question will be finally settled in such a manner as will admit of no dispute in the mind of any honourable merchant or dealer in yarns. And we trust, too, that all who disregard the resolution, and continue in the practice of making up short-reeled yarns, to the loss of the purchaser and the disadvantage of honest traders, will be made to feel the penalties of the law wherever and whenever it can be brought home to them, and that no effort will be spared to bring the legislation of other countries into harmony with our own upon the subject. This would place all traders upon a common footing, and would render competition fair and the conduct of business much more of a pleasure than it has been for a long time past.

THE EMBROIDERY INDUSTRY IN FRANCE.

An article by G. Michel, in the *Economiste Français*, gives the following interesting facts and figures concerning the embroidery industry of France. There are in France, it appears, only about 1,800 embroidery machines, of which 900 fall to the share of the departments of Aisne, Pas de Calais, and the department of the Nord; and the other 900 to Maine-et-Loire, the Rhône department, and the Vosges. Switzerland and Germany, on the other hand, possess 37,000 of these machines, producing goods to the value of £5,500,000, and furnishing employment to 125,000 persons. France is compelled to turn to these and other lands, so that a serious rise in the duties would interfere both with exports and imports. In France, as in other countries, four sorts of embroidered goods are produced—white embroidery, fancy embroidery, gold and silver embroidery, and woollen or silk embroidery on canvas. The white embroidery uses mostly muslins, cambrics, and tulles. It comprises four classes—the usual common embroidery, with which in

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France the factories of St. Quentin are principally concerned; the fine embroidery, which is produced chiefly in Meurthe and in the Vosges; and the furniture embroidery, the centres of which are Alençon and Tarare. Some work of this kind is also produced in Paris, but the most prominent firms in that city employ only a small number of hands in this department, for monograms, etc., they have the material cut and the designs represented in printing, and then send the articles to the provinces for the embroidery to be actually executed there. The fancy embroidery, however, has its principal seat in Paris. The work falls here into the hands of agents, who have the designs, which they get executed either in France or abroad. They visit the manufacturers and large making-up houses and offer their patterns. The manufacturer selects and gives over to them the fabrics to be embroidered; the price per piece is agreed on, and they undertake the execution as well as the furnishing of the materials, pearls, silk, etc. The gold and silver embroidery also is executed principally in Paris. This branch rose into importance mainly at the beginning of the century, when great public ceremonies exerted a favourable influence on the development of the industry. The unsatisfactory condition of the French embroidery trade is proved by the fact that the French linen industry is compelled to send its linen, to a large extent, to foreign countries to be embroidered, or to apply imported embroideries. It must further be noted that the French embroidery industry is obliged to procure considerable quantities of material from abroad for the use of the native industry: as, for instance, cambrics from Ireland, and woollens from Switzerland. This also is regarded as a reason for the inferiority of French industry as compared with that of other countries.

Roubaix and the M'Kinley Tariff.

Reporting on the effect of the McKinley tariff at the request of the French Minister of Commerce, the Roubaix Chamber of Commerce describes the effect of that enactment on the trade of the district as very disastrous. Exports to the United States have decreased enormously. The Chamber finds it impossible to give exact statistics on the subject, because direct exports from Roubaix have always been the exception, the bulk of the trade being done through Paris, Antwerp, London, and Liverpool. It believes, however, as the result of careful enquiries from the leading firms concerned in the trade, that shipments have fallen off 50% since the new tariff came into operation. Large as this diminution seems, it is probably about the mark, as Bradford, which is engaged on similar goods to Roubaix, has suffered to almost the same extent. The Roubaix Chamber complains that the misfortune has been aggravated by the fact that manufacturers in other parts of France are, in consequence of loss of American trade through the Act, competing with increasing keenness with Roubaix. Great complaint is made of the minute details of exports now required by United States Consuls, and of the harsh way in which every doubtful point is pressed against French firms. This has, of course, been the experience of firms in other countries, as we have repeatedly shewn in the course of comments on the working of the McKinley tariff in Europe. The spectacle of French protectionists writhing under the application of the laws which they themselves are so fond of applying against the outside world is one calculated to arouse no sympathy from foreign nations. We have seen repeatedly that the application of that sauce to the goose which is considered sauce for the gander creates, as a rule, a most vigorous outcry. What is Roubaix going to do about it? The answer is obvious. She can do absolutely nothing, unless, indeed, the Government can be persuaded to impose differential rates on American products. If such a course be adopted we may expect a retaliatory move from Washington, as it is unlikely that special terms will be granted by the Americans to French silks or woollens. What the outcome of this commercial war will be none can tell. In its effects it may be considered as disastrous as arbitrament by the sword, in its dislocation of industries and consequent infliction of suffering on the poor. The American idea that the world can be persuaded to continue purchasing American products when the United States ceases practically to do so is based upon childish notions of economic laws which experience will rapidly dissipate. All that well-informed persons can do is to watch and wait for the educative influence of facts to operate.

Dead Men's Gold.

The wills proved in 1890 again shew that the North ranks high as a centre of the country's wealth. The London income-tax returns undoubtedly indicate that the profits of firms in the City are higher than those of Lancashire, which comes second on the list. It must be remembered, however, that the profits made by most firms who may have offices in London, are not earned there. This applies with great force to the returns from the large banks, which depend for their business not on London, but on the country, which also supplies most of their capital. It is impossible to analyse the profits of the great banks and other institutions, so as to credit each part of the kingdom with its proper quota; but this much may be said with truth, that Lancashire is the greatest wealth-producer in the country. Of the four estates with personalty exceeding half a million, proved during the year, two belong to the North, one being that of Mr. John Bullough, of Accrington, whose personal estate was valued at £1,091,835. Eighteen wills with personalty exceeding £400,000 were proved during the year. These included those of Mr. Hugh Kerr, a Liverpool merchant, for £402,000; Peter Carmichael, flax spinner, Dundee, £516,781; Richard Hemming, needle manufacturer, Redditch, £781,442; and Lewis Loyd, formerly a local banker, £593,359. Amongst the wills proved with personalty between £200,000 and £400,000 may be noted those of—

George Walmsley (67), cotton spinner and manufacturer, Oswaldtwistle.....	£224,699
Mrs. Sarah Langworthy (94), Manchester ..	224,377
Edward Cross, Bolton, cotton spinner.....	238,813
Andrew Kurtze (66), Liverpool, chemical manufacturer	257,698
Prince Smith (86), Keighley, machinist	305,540

With personalty between £100,000 and £200,000, the wills have been reported this year of Joshua Radcliffe (79), Rochdale, £178,070; Henry Leigh (72), Moorfield, Swinton, £162,660; Charles James Ashton (61), Hyde, £141,122; Charles Blackburn, of Blackburn Park, £119,056; Edward Lloyd (70), Hawkhurst, brother of Lewis Loyd, £139,652; and Alderman Joseph Musgrave (78), Bolton, £132,877. Andrew Pickard, of Ossett, Yorkshire (who left £5,000 to the Lifeboat Institution), had personal estate valued at £164,093; his sister, Miss Hannah Pickard (who left over £50,000 to charities), £139,926; Thomas Edward Taylor, of Barnsley, linen manufacturer, who had also much landed estate, £110,355; Henry Taylor, of Fairfield, Leeds, £122,241; and Samuel Hyam (83), of London, Leeds, and Birmingham, tailor, £118,048. Many of the fortunes referred to above have certainly not been accumulated from profits earned during the past dozen years, but are the results of successful commercial transactions conducted prior to that period. Profits now-a-days do not permit of such large fortunes being gathered by legitimate trade operations, and the tendency of the times is for them to be cut down. Mr. Taylor was the *doyen* of the Yorkshire linen trade, now sadly reduced from its former position of greatness. Its profits have been cut down to the vanishing point, and the number of firms in the business has fallen off by about 75 per cent. since the American Civil War. Clearly, therefore, Mr. Taylor must have accumulated his wealth in the earlier days of the trade. Other wills of persons in the North connected with the textile industries were: Bernard Duckworth, Manchester, merchant, £14,195; Thomas R. Peel (42), of Peel, Watson, and Co., Manchester, £14,547; David Madeley, Manchester, £18,806; Herbert Birley, Pendleton, £42,856; and Walter Haworth, Bowdon, yarn agent, £43,987.

Textile Progress in Russia.

The great advances made by textile industry in Russia during the last few years are strikingly attested by several facts noted by a German contemporary. First may be put the steady decline in the amounts of textile manufactures imported into Russia; and then must be noted the increase in the number of factories, which amounts to more than 200 in four years. There has consequently been an increase in the amount of the production from 410,014,000 roubles in 1885, to 522,007,000 in 1889. The measures that have been taken for the promotion of the cultivation of cotton in Central Asia and in Turkestan are now well known to have been followed by encouraging results, so that the products of these provinces have for some years held a place in the Russian market, and are excluding by degrees the American article.

How Cotton Buyers of the "Limiteds" spend their time.

At the quarterly meeting of the Albany Spinning Company, Middleton, a Mr. J. Harper said that serious allegations had been made as to the way in which managers of limited companies went about their business when buying cotton, and he had authority for making the statement. "Only the other day he was speaking to one of the best private cotton spinners in Lancashire, and to another private cotton spinner at Shaw, and they both told him that it was a common matter of remark amongst private cotton spinners with regard to the conduct of buyers of these limited mills when they went down to Liverpool. If that were true, then it ought to come before boards of directors and be seriously enquired into. One of these gentlemen (a private cotton spinner) stated that when he went to Liverpool it took him a great portion of the day—in fact nearly the whole of the day—to go from one office to another, to use his judgment, discretion, and care, before he bought any cotton; and that it required the whole of his serious and thoughtful attention before he could make a purchase. But on the other hand, said this private spinner, he found that the buyers of the various limited companies bought their cotton in a very few minutes, and for the rest of the day ranks of them had picnic parties at New Brighton. That was a common remark among private cotton spinners, and he was prepared to prove that it was a fact that these buyers went down to Liverpool, spent no time in using their discretion or judgment in buying cotton, but gave their time to jollification." This is a rather weighty allegation to make, but it is to be hoped it does not account for the serious mistakes which characterised the cotton policy of

most buyers during the past season. It is known that the 'limited gentry' are believers in the 'all-work-and-no-play-makes-Jack-a-dull-boy' theory, and many are the occasions on which they manage to include a run over to New Brighton with a business journey to Liverpool. As a rule, the 'limited' managers are limited in their purchases to one, two, or three brokers, and, therefore, have no necessity to go from one office to another to use their judgment, discretion, and care, though they give the buying of cotton their serious and thoughtful attention. The Chairman of the Albany Spinning Company (Mr. R. Booth, J.P.) replied to the allegations by saying that he thought their manager had not been to New Brighton very often, for it was generally ten or eleven o'clock when he left Middleton, and very often he was back at the mill again at three in the afternoon. That proved that he did not waste much time in Liverpool. What have other companies to say?

ITALIAN TEXTILE INDUSTRY.

There is nothing in the Italy of to-day which can be in any way compared with the splendid commercial development of some of the Italian republics in the middle ages. Those days are past, perhaps never to return. Nevertheless, modern Italy is shewing many signs of increased vitality as compared with the state of things a century ago, but she still seems to be far in the rear when her relative progress is contrasted with that of other countries. The working up of hemp, flax, and jute, is of secondary importance in Italy. In 1876 there were only about 60,000 spindles engaged in these branches of manufacture both in factories and private houses; and it is assumed that there has been no material increase since then. The reasons for this stagnation in this particular department are of different kinds: one of course always put forward is the retarding influence resulting from the low duty formerly imposed on foreign yarns. In cotton spinning there has been a marked development since 1878, which has naturally been accompanied by a considerable advance in the amount of raw cotton imported. Moreover, several spinning factories have been enlarged, and new ones have come into existence in different parts of the Peninsula. So far as the quality of the goods is concerned, the Italian spinning factories produce principally No. 20's, and a little over 30's; but still higher counts are quite exceptional. As for weaving, the position of the Italian factories is almost the same as in 1876. Their products are confined to the production of edged foutaines and other ordinary fabrics, whereas the finer qualities, such as madapoleams, piquets, cambrics, muslins, and tulles, are obtained from abroad. In 1876 the number of persons occupied in the cotton industry in Italy was estimated at 54,000. At present the number exceeds 70,000. The cultivation of cotton in Italy is carried on on a very small scale. Far less attention is being given to it than was the case a few years ago, the area of land used for this purpose being not one-tenth of what it was in 1873. The woollen industry has long been prominent in Italy. It employed in 1886-7 about 313,000 spindles, and about 15,000 looms, of which 9,000 were in factories. The development of this industry, however, does not correspond to the expectations which have been cherished. Among the reasons which are assigned are want of division of labour, smallness of the works, great distance of the wool markets, and imperfect cleaning arrangements. There can be no question, it is said, that the Italian wool industry is in need of reformation. The silk trade, however, presents a pleasing picture. It indeed is indubitably the *pièce de resistance* of Italian commerce. The extensive activity in the production of raw silk, however, is not accompanied by a corresponding activity in silk weaving, and large quantities of silk leave Italy to be completely worked up in France. There are in Italy only about 130,000 looms for silk weaving, mostly hand-looms, whereas the French silk industry has about 120,000, and the German about 70,000 looms. Here is, unquestionably, wide room for development, especially as Italy has to compete now with North America and with Japan.

A WELSH NATIONAL GARB.

There has lately been some talk about revising the national dress of "gallant little Wales," and so long as examples of not too long ago were adopted, the proposal would deserve all the approval with which it has been welcomed. The steeple hat and long full blue cloak would be well enough, but it would not be necessary to go very far back, nor out of the company of these articles of apparel, to find the people generally going barefoot, or wearing footless blue stockings, which were kept in place by a loop passed round one of the toes. That, as need hardly be said, is one feature of real Welsh dress which would not commend itself to modern ideas, and another more ancient habit of wearing a great veil, which was gathered into a kind of crown or turban about a woman's head, would be as little likely to meet with acceptance. But it is quite on the cards that there will be, not only an endeavour to establish anew the garb of old Cambria, but that there will also be some movement in favour of home industries within the principality. If it has not already been thought upon, the suggestion is offered gratis. The times are favourable: there is a Welsh Lord Mayor of London; a pageant representing—but very inadequately, and under very unpropitious conditions—the industries of Wales, formed part of the annual ninth of November Show; and if there is any just cause or impediment why Welsh industries should not have equal prominence and support with those of Scotland or Ireland, somebody will please declare it. There would be the best of precedents for all sorts of Welsh fabrics, more, by far, than might readily be anticipated, and Welsh knitted stockings in particular, if their ancient reputation counted for anything, ought to be sure of a warm reception. At Bala and Barmouth and Dolgelly, and places where tourists most do congregate, there were once regular markets for knitted goods, served by all the country round about, and attended by buyers from far and near.

SOME WELSH TEXTILES.

There were some textile industries of other days which would not appear to have much chance of prosperity now. At Newbergh, in Anglesey, there was a manufacture of mats and cordage "made from marine plants," which might offer hopes of success when new fibres are being so sedulously sought after, if it could only be discovered what these indefinite marine plants were. Denbigh was noted for its tanners and glovers, as it could hardly look to be again; and Wrexham, besides being a busy centre for a widespread production of flannels and stockings, both of worsted and yarn, could boast a considerable trade in "Huckaback Linens," according to one account to the value of £500 weekly. As the statement relates to 1783, that sum then represented good business. Although astonishing to find a flax industry in this neighbourhood, there need be no hesitation in giving credence to it. Bridgnorth Fair was the time and place every year for dealing, not only in woollen stockings and leather, but in linen cloths as well. At Shrewsbury, where there was a thriving and diversified trade, one of several companies which took part in an annual show, on Corpus Christi day, was that of the *Linarine* Flax Dressers. Each of the guilds was responsible for a pageant, as appropriate as possible to its own calling, in the public procession. The Shearmen carried either a figure of Edward IV., by whom their charter had been granted, or else Bishop Blaize with a mitre of wool, and a full-made shirt to represent lawn sleeves; the Tailors and Mantua Makers bore before them a royal lady supposed to be something like her dress-loving majesty Queen Elizabeth, or, in her stead, figures of Adam and Eve with no dress at all, but long aprons of fig-leaves sewed together. The Flax Dressers, in defiance of history, would have another Adam and Eve, "dressed in closely-fitting dresses of net, with wreaths of leaves, and a stream of flax flowing from their heads in imitation of hair. That of the lady—literally flaxen hair—was so profuse as to completely envelope her body." This is curious testimony to the cultivation and treatment of flax in the Marches of Wales, but still more curious witness as regards another of the vegetable fibres for which Dr. Jaeger professes so much contempt, may be found in the jocular title of *Welsh parsley*, which was given to hemp, as explained in one of Beaumont and Fletcher's plays:—

> Tough Welch parsley which our vulgar tongue is
> Strong hempen halters.

This was, at one time, humour after an Englishman's own heart. He had other significant names for hemp—*gallows grass*, *neckweed*, and the like; he called sprats *weaver's beef*, and *Cotswold lions* was his lively title for sheep. He was much given, too, to the coining of nicknames from personal circumstances, as any reader of Shakespeare would know, and no better evidence to Welsh textiles could be wished for than the expressions which jolly Jack Falstaff applies to Sir Hugh Evans in the last scene of *The Merry Wives of Windsor*. The *Welch flannel* is what he calls the Welsh parson, and says again, "Am I ridden with a Welsh goat, too? Shall I have a coxcomb of frize? 'tis time I were choak'd with a piece of toasted cheese." By which we know that flannels and friezes were as peculiarly Welsh as the rare-bit or the leek itself. Some further notes on this interesting subject of Cambrian textiles are unavoidably crowded out until next week.

THE CALICO PRINTING AND CARPET TRADES.

The collapse of the projected calico printing and carpet syndicates, and the failure of several calico printers, including the Kinder Company, are now matters of history, and it is unlikely that any schemes of a similar character will be brought forward, except on totally different bases. The means adopted for the floating of the first-named scheme were not calculated to result successfully, although Sir John Puleston, who is connected with other ventures, is no doubt an able gentleman. The carpet trade is less likely to form a combination, in our opinion, than the calico printing industry. Its elements are too scattered, and we have always scouted the idea that the Scotch manufacturers, not to speak of those in the North of England, could be handled from a central office in Kidderminster. The former are to be found in Glasgow, Ayrshire, Paisley, Dalkeith, Bannockburn, Elderslie, and elsewhere, many of the firms possessing a large quantity of machinery. Over-production seems to be the bane of the carpet trade, as it is of the print trade; but the causes which have brought about this state of things differ widely. In the one case the substitution of inferior cloths, heavily sized, during the American Civil War, is said to have turned the public against prints. This, however, is only half the explanation, for

whatever injury may have been produced by this cause, it cannot equal that due to the introduction of cheap woollen dress goods from Bradford and Roubaix. The prints sold by home-trade houses at the present time do not possess the objectionable features referred to No fault whatever can be found with the goods which Potters, Graftons, the Thornliebank Company, and other high-class firms sell to merchants, but still complaints are made that the trade will not bring in a profit. We fancy that this can only apply to the smaller firms who display no designing talent, and as to these, many regard their condition as hopeless. The carpet trade has not suffered from the causes referred to. People of the upper and middle classes, with a good sprinkling of poorer folk, must have Axminster, Brussels, or Tapestry floor coverings, and those who cannot buy these use felt or matting instead. The consumption increases every year, and if new machinery is not laid down too quickly the trade may be expected to revive ere long. There is little hope of our regaining the lost trade with the United States, but we may reasonably expect to see an increase in our shipments to Australia, which is one of the most promising markets we possess. The home trade, under existing conditions, appears perfectly safe for British manufacturers, and of the two we should say that the carpet industry has better prospects than the print trade. During the past year there has been a good deal of short time worked, but matters have improved a good deal lately.

Textile Imports into Constantinople.

The following items about the textile supplies of Constantinople from foreign countries will be not without interest for our readers. Coloured woollen flannels are procured mostly from Bavaria, but have for some time had to suffer from the increased sale of printed cotton flannels, *Kalmuks koper*. The sale of these German flannels may have amounted to about 4,000 pieces, of about 30 metres each, and the qualities were, as a rule, cheap. A considerable portion consisted of embroidered flannels. The white flannel branch is supplied with articles from France and Holland, the former sending finer wares, the latter coarser varieties. This Dutch competition, it appears, is affecting the German trade in Constantinople. The better sort of printed cotton flannels (kjöper) have gone off well. They were furnished principally by Austria, but to some extent by Germany. The Austrian article is characterised by pleasing designs, corresponding to the taste of the Turkish capital. The import of this department amounts to as much as 8,000 or 10,000 pieces, and the price varies from 65 to 75 cents per metre. For a time the so-called lambskins were sought after. According to the Austro-Hungarian Chamber of Commerce in Constantinople, the sale of woollens and half-woollens and also of cotton flannels seems to be less active than in former years, the public having turned to other materials of a similar kind. In printed cottons the German manufacturers claim that they successfully hold their ground against English competition so far as the better class of goods is concerned, but it is admitted that England dominates in this branch. Cotton velvets, coloured and black, in cheap qualities, come from England, and articles claimed to be better from Germany. Austria supplies very little. German manufactures of this kind are said to be characterised by vividness of colour, and therefore are preferred to English goods, notwithstanding the lower price of the latter. In consequence of the extensive use of tricots for underclothing, imports of this class of goods are very large, and amount to almost £100,000 per annum. Cotton hosiery at 6 to 15 francs the dozen come mostly from Italy and England; finer qualities at 15-40 francs, from France; half-wool, at 12-18 francs, come to a large extent from Italy and Germany; heavy thick goods from England; and finer fabrics from Germany, Italy, and Switzerland. In stuff and cotton gloves Germany exclusively rules the market.

Commerce with Africa.

It is strange how the European nations, who are so envious of the Colonial expansion of the British Empire, and who have started in a race of rivalry with us, ignore the methods upon which we have proceeded and upon which our power is mainly built. Justice and benevolence are its leading features, and we prosper, as would all men, in the prosperity of those we govern. In other cases, and especially that of France, it is selfishness and exclusive dealing both abroad and at home that govern their policy—and hence the enormous trouble they have with all their Colonial ventures. Scarcely one of these has ever yet proved anything but a drain upon the resources of the nation at home, and in most it is doubtful whether they will ever improve. On the other hand, Great Britain's management of her dependencies at the present moment affords a signal instance of a method opposite to the French, and from which, if they were wise, they would take a lesson. It is just announced that the British Protectorate over Zanzibar has signalised the first year of its existence by preparing for the inauguration of a fiscal policy of the highest importance for the future of this the commercial capital and emporium of East Africa. The new departure consists, in fact, in the practical establishment of Free-trade in the Sultan's dominions. A large representative gathering was held at Zanzibar on Saturday, attended not only by the leading native British and Indian traders, but also by the chief German residents, at which the British agent, Mr. Portal, announced that from the first of February next all import duties would be abolished in Zanzibar, with the exception of a few articles, chiefly luxuries, on which duties would be levied simply for revenue purposes. The excepted articles are wines and spirits, arms and ammunition, and kerosene oil. All other goods would, after the date in question, be imported free of all Customs duties. The meeting received the announcement of the British agent with the warmest and most unanimous tokens of approval. This ought to be of great service to the interests of Lancashire.

The Year's Home Trade.

From a textile point of view, the past twelve months have not proved altogether satisfactory to distributors. The difficulties against which merchants have to contend seem to increase year by year rather than diminish. Occasionally, as we have seen, they are troubled by the tendency of some firms to trade direct. This has been repeatedly attempted, one well-known instance being in connection with a very large firm in Lancashire, which, after filling its books with small drapers' accounts, returned to the merchants, disgusted with such pettifogging trading. Despite the talk now so frequently heard regarding the abolition of the middleman, we believe that the latter will continue to flourish. He is a necessity, filling a useful place in the commercial world, and although some producers, placed in exceptionally favourable positions, may be able to dispense with his assistance, the majority of manufacturers cannot do so. Retailers themselves would not encourage the enormous increase in the number of travellers that would result if every producer sent out his own. It would be impossible for them to attend to their own business and see all the callers as well—a fact which should be obvious to everyone. Even where manufacturers have 'gone direct,' only the best accounts have been selected, such as those of Kendal, Milne and Co. and Paulden's in Manchester, Compton House and G. H. Lees in Liverpool, "Johnny" Anderson and Walter Wilsons in Glasgow, and the Irish Pims and Arnotts. Such firms can place larger orders for certain classes of goods than many wholesale firms, and it may be worth the while of a few manufacturers to transact business with them. But even these firms would not care to be deluged with an army of commercials, and many of their purchases are still made through wholesale merchants. Such fabrics as Horrocks' long-cloths, although sold to drapers by the producers, are also bought from merchants, who are able to sell them without profit, in consideration of the gains made by sales in other departments. The saving in carriage on large consignments is also an important item, and it will be clear to all that the wholesale houses are placed in a better position in this respect than those who have only one or a few articles to sell. We are not advocating the claims of the wholesale houses as against those of manufacturers, but think that these remarks will meet with the approval of ninety-nine producers out of a hundred. The matter is referred to here as the question has been brought forward rather prominently in connection with the recent marking agitation, in which the energetic Mr. Wardle, of Leek, has taken such an important part. Returning to the course of trade in the year, the Spring, it may be remembered, saw a fair demand for fall nets, some of which were handsomely ornamented with various fanciful designs. The Russian spots did not remain popular for long, owing partly, we fancy, to the fact that they came off in damp weather. With reference to laces generally, the past few seasons' experiences have been somewhat disappointing. Silk descriptions moved off freely for a time, but afterwards declined. Of silk goods generally, however, it may be remarked that, in consequence of the impetus afforded by the Paris Exhibition, there was a larger production than the consumptive capacity of the world warranted, and this accounts for the depression of last year. The home-trade generally has not been altogether satisfactory.

Dispute in the Coloured Goods Trade of the Radcliffe District.

Our Radcliffe correspondent writes: "The relations between the employers and employed in the coloured goods trade in the Radcliffe district have now reached somewhat of an acute stage. Some four months ago, Mr. J. C. Hamer, of Hope Mills, gave way to the demands made by the Operatives' Association, and the operatives then turned to Messrs. Young and Co.'s Red Bank Mills to obtain a similar concession from that firm. This the head of the firm thought unjustifiable, considering that owing to the comparative newness of the machinery and the good quality of the work the operatives were earning a higher average wage than at the majority of the mills in Radcliffe. Therefore he refused to grant the demand, and appealed to the Employers' Federation, whose Committee met the Operatives' Committee and agreed that a new list should be formed. Ultimately the operatives were asked to present a list of prices. This they did, but the employers objected to several items as being excessive, and they instructed their Secretary to write the Operatives' Committee to the effect that having carefully compared the list with the prices paid by their competitors in Farnworth, Pendleton, Nelson, and Colne, it was utterly impossible to accept

the list. They proposed as a final offer that on and after the third making-up day in January the following prices be paid:—For one and two shuttle work an advance of 10 per cent. on the Colne standard list; on three shuttles, 12½ per cent. advance; on four shuttles, 15 per cent.; and an extra 2½ per cent. for every additional shuttle above 4's. Extras for reeds, width of cloth, coarse warp, and coarse weft, shafts, pick, etc., as Colne list. Cloths three or more ends in a dent, and other extras for two beams and fancies, to be mutually agreed upon by a joint committee from the weavers' and manufacturers' unions. They made that offer of higher prices than those paid by their competitors in the market from a desire to avoid a strike, with its certain loss and injury to all concerned, and believed that by working at the above scale of prices the workpeople would be kept in more constant and regular employment, and the wages kept as high as under present conditions, while the manufacturers would be assisted in bringing back to the district the production of cloths which had been gradually driven away. Should that offer be refused, they were prepared to submit the whole question to arbitration. At a meeting of the weavers held at the Co-operative Hall, Radcliffe, on Tuesday night, this offer was declined by the operatives, who instructed their representatives to continue their present course. It was contended that the work was required to be turned out better, and that in Radcliffe the looms were the drop-box pattern instead of circular boxes as at Nelson and Colne, and that the conditions generally were different. They also wanted an advance of 5 per cent. on the third shuttle instead of 2½ as proposed by the employers. The latter say that no allowance is made for fine reeds, and this seems to be the principal bone of contention. The matter affects something like 7,000 looms in this district."

A Ship Canal for Paris.

Our friends across the channel are much exercised just now by a project for the construction of a ship canal between Rouen and Paris, which would turn the latter city into a seaport. It would be 182 kilometres long, that is, only 47 kilometres longer than the railway route; and would have a normal breadth at the bottom of 35 metres, and at the curves a depth of 45 metres, that is, double the breadth of the Suez Canal. The cost is estimated at £6,000,000. The consequences of the successful completion of this undertaking might, in the opinion of some of our sanguine neighbours, be startling, indeed revolutionary. They seem to have a vision of Paris rivalling or supplanting London in commercial importance. "If Paris had possessed such a means of communication with the sea since the time when Vauban conceived the idea, would it not," asks one of them, "have successfully rivalled London as an emporium?" For such a purpose, it is argued, Paris has unique advantages by the importance of its population and industries, by its geographical situation, and by its immense financial resources. The cost of unloading in London and reloading into ships which convey the goods to the Continent, is alleged to be so great that if London has incontestable advantages over Paris in consequence of "the considerable traffic of England with countries beyond the sea," Paris has the advantage of being far better situated to serve a port of Europe. The opinion of a Belgian engineer is then quoted, and is sufficiently curious to deserve reproduction, as it expresses the sentiments of an intelligent observer as to the probability of the actual execution of these schemes. "Paris would be a more agreeable seaport than London. . . . Antwerp would lose a part of its traffic—namely, that which comes to it to-day from Paris itself and from the East of France, from Alsace and Lorraine, from Switzerland and Bavaria; but Antwerp need not be disturbed; it is not soon that this idea will be realised, however advantageous and practicable it may be." Allusion is made in the article from which these facts are taken to the Manchester Ship Canal as an example of the way in which far *inferior* communities—for "that great manufacturing city cannot be compared to Paris"—are making provision for the extension of their commerce.

Textile Industry among the Jews.

It is a curious but indisputable fact that textile industries were held in low esteem among the later Jews. There are several sayings in the Talmud which imply that weavers were a despised class. We find, for instance, the contemptuous proverb—"Even a weaver is a prince in his own house," and the equally significant remark that "the pipe which suits respectable people does not suit the weavers." It is also hinted that weavers used to sing over their work songs which were too frivolous for grave persons to listen to. Nevertheless, one of the greatest men whom the Israelitish nation, or we may even say the human race, has produced was directly or indirectly associated with spinning and weaving. Everyone knows that the Apostle Paul was a tent maker. Comparatively few in all probability realise that this trade was closely connected with, if it did not actually include, textile operations. These tents were made of the black hair of the Cilican goats, which had to be spun and woven before it could be used for this purpose. So we may safely assert that the great Rabbi and Apostle was either a weaver or only a single remove from one, and textile workers may lift up their heads in the assured confidence that theirs is no mean calling, but one more or less graced by one of the world's most honourable names.

Nitrated (yellow-dyed) Silk.

M. Berthelot submitted at a recent meeting of the French Academie des Sciences a collection of samples of nitrated silk, forming a complete scale of all the most varied and brilliant shades of the yellow or orange tint—a collection forwarded to him by M. Leo Vignon, lecturer at the Faculty of Sciences and sub-director of the School of Chemical Industry at Lyons. It is known that nitric acid imparts a yellow colour to albuminoid substances, such as wool and silk. This reaction was utilised at Lyons at a certain epoch for dyeing yellow by means of nitric acid, under the name of *mandarinage*. M.M. Vignon and P. Sisley have studied the phenomenon, the theory of which was not known, and, according to the *Bulletin des Soies*, they have proved that nitric acid does not of itself colour the silk; that it is necessary that it should be associated with nitrous acid for the colouring to be effected. The nitrous acid transforms the silk into a nitrous derivative, which the nitric acid oxydises and transforms into a nitrate derivative. The silk dyed yellow by nitric acid is therefore nitrated silk. It burns without flame, and behaves with respect to solvents pretty nearly like ordinary silk. In contact with concentrated sulphuric acid it swells into a viscous mass, transparent like the albumen of an egg. Nitrated silk is strongly coloured yellow, and it is curious to account for the appearance of the colouring, the white boiled silk and the acid being both colourless. The nitric acid is probably the producer of colour, developing the colouring properties virtually contained in the silk. Wool behaves like silk, whereas vegetable fibres only yield colourless products when treated with nitric acid.

THE NEW MILLS OF THE STOCKPORT RING SPINNING COMPANY, LIMITED, STOCKPORT.

Messrs. Brooks and Doxey, late Mr. Samuel Brooks, Cotton Machinists, Manchester.

Architects:
Messrs. Stott and Son, Manchester,

The progress of civilization is written in architecture. From the cave dwellings of prehistoric man, through the intervening ages, to the classic architecture of Greece and Rome, and the Gothic development of more modern times, there is easily traceable the increasing wants, the expanding intellect, and the growing refinement of manners and life amongst mankind. The truth indicated here has long been recognised by students of history and accepted by the rest of the world on their authority. The principle of this truth is also discoverable in many of the separate phases of the great movement that, in its aggregate, we term civilization. But in none of these is it more easily seen than in the first outcome of the modern industrial revolution, the English cotton trade. A brief retrospective glance at the beginnings of our factory system will be both interesting and instructive, and will afford a striking contrast to the maturity of the present time, as exhibited in the fine illustration we give to-day* of the grand new mills of the Stockport Ring Spinning Company, Limited, Stockport. These magnificent mills may be accepted as the highest expression of the architectural skill of to-day applied to the latest requirements of the cotton trade on the side of its most recent development, that of ring-spinning.

The terms mill and factory, now in common and synonymous use in their relation to the cotton trade, have only a distant relationship to the term factory as understood in the world of commerce: a place of storage in a foreign country for merchandise. The first name is probably borrowed from the wind or water-d iven corn mill, in which connection it has long been in use. The second is probably a derivative from factory, an early equivalent for the modern term workshop, in which the "facture" or making of goods took place when not made upon the workman's dwelling. This being before the application of wind or water motors, the term factory served all requirement. When first horse power, next water power, and finally steam power, was adopted, the term manufactory became necessary to discriminate between places in which goods were made by hand, and those in which the natural forces were subordinated to the requirements of industry. This term, however, never came into popular use, and soon gave way altogether to the more terse and euphonious mill and factory.

These terms, as now commonly understood, mean large workshops, housing the machines of every kind that are now used in all the processes of nearly every industry that has called in the aid of motors transcending in power that of the human being. These, of course, are mainly four: wind, water, steam, and gas; electricity has also begun to solicit attention for the same purpose. It is, however, only water and steam that will incidentally call for any notice here.

Historically regarded, the mill or factory as we have defined them, and in connection with the cotton trade, made their appearance at a very early period in the industrial revolution to which we have referred. The mill closely followed the machines as a necessity. We find the germ of it in the first machine that demanded special housing, because of the dwelling-house not being large enough to

* See double-page supplement, printed in colours, accompanies each copy of this week's *Textile Mercury*.

entertain it and leave any convenience to its human inmates. Hence, though these machines had not got beyond human power in their motor requirements, their owners were impelled to provide special accommodation, which was done by adding a storey to the dwelling or constructing a lean-to shed against one of its walls. This, as we have said, was the germ of the modern factory, and it did not long remain in this stage. Hargreaves' jenny was capable of being worked by hand in almost its highest developments during the first twenty years after its invention, but Arkwright's water frame was a much heavier and more complex machine, and passed beyond the capacity of hand power from the first. This at once necessitated the provision of a stronger motor, and that of the horse was first tried. Arkwright had followed Hargreaves to Nottingham to avoid the destructive riotousness of the Lancashire people, whose hatred of the new machines was strongly and loudly expressed. Here, in conjunction with his friend John Smalley, his first money-finder in his experiments, he built or acquired a small building in Woolpack-lane, in which the adventurers placed two or three machines and worked them by horse-power. Anyone who has inspected this building, as we have done, would not wonder at the early necessity of the adventurers seeking the aid of

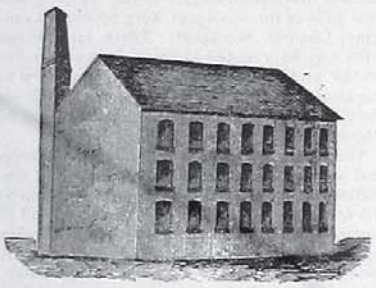


Fig. 1.

a capitalist of much greater means than themselves. Whether priority should be given to this structure, or that of Hargreaves' established in Mill-street (now Bow-lane), Chapel Bar, in the same town, we cannot say at the moment, but it is certain that the latter afforded a great deal more accommodation, and in all respects was a much better type of a cotton mill on a small scale than that of Arkwright's. This mill is now transformed into cottage dwellings, but bears strong marks of its origin, besides having given its name to the street. Hargreaves made his jennies upon these premises, and they were worked there by hand-power. In passing, we may say that James Hargreaves died in one of the houses just opposite.

As might naturally be expected, two classes of mills speedily made their appearance: first, those of the enterprising but nearly impecunious adventurers who saw the greatness of the opportunity before them and were content to begin in a way commensurate to their small means rather than not begin at all. To the enterprise of these men must be attributed the numerous small mills built up and down the country during the closing quarter of the last century, and a few of which yet survive, though the majority have long ago been swept away or turned to other uses. Arkwright's first mill in Woolpack-lane, Nottingham, built in association, we believe, with John Smalley, was one of these, and so was that erected by John Smalley alone at Holywell, North Wales, in 1777, and which, after standing as a ruin for many years, was cleared away about five years ago. This was an interesting old mill from its having been built by the financial helper of the great inventor in his days of poverty, but whom there is reason to fear he did not treat well when fortune began to smile upon him. It was known in the district as "the old cotton mill," and was a small low structure of three storeys, 33 yards long and 8 yards wide, and deriving its power from a water-wheel of 15 ft. diameter and 5 ft. width across the face. Its walls might be said to be of a conglomerate order, being composed of a mixture of quarried building stone, bricks, refuse, limestone, boulders, and rubbish gathered from the wayside, or the bed of the stream. This mill, which was furnished with Arkwright's water frames, was the foundation of John Smalley's fortune. In seven years he had been so successful that he erected a mill near to it 40 yards long, 10 yards wide, and six storeys high, and accomplished the feat in the short space of six weeks from laying the foundation stone. This was a matter to be proud of in those days, and with all the smartness of Oldham men they have never yet equalled it. We give this statement upon the authority of Pennant, the historian, antiquarian, and naturalist, who was a neighbour and friend of the family. This mill, however, belongs to the second type, or those built by the capitalists of those times. The mills of Arkwright at Cromford, Masson, and Belper, erected after he had secured Jedidiah Strutt for a partner, are also illustrations of these. There is again Arkwright's mill in Miller-street, Manchester, a fine specimen of the mill architecture of the closing years of the last century, in which the builders were backed with the means necessary to carry their best ideas into execution. The handsome mill erected by Samuel Oldknow, on the banks of the River Goyt, at Mellor, in Derbyshire, is another good specimen. All these last-mentioned mills, with perhaps the exception of that of Cromford, have done good service throughout all the intervening period, and will probably continue to do so for a long time to come, in spite of the changes that invention and progress seem to enforce in other instances. These are examples, however, of the survival of the fittest: those which had been erected of great and superfluous strength for the time and its requirements, and which has rendered them adaptable to modern use. Nearly all the others, having been lighter in construction and no longer of suitable dimensions, have been dismantled. Of this old type of mill we give an illustration in Fig. 1, which shews the general construction of cotton mills as they existed in the first quarter of the present century, and when steam had been generally introduced. Mill architecture as thus sketched might be termed in its first period, which practically covered a term of 50 years.

The second or middle period covers another term of like duration, namely, from 1825 to 1875. At the commencement of this time the cotton trade had grown into a large industry, and especially in the spinning branch. Manufacturing was only just beginning to feel the influence of the introduction of the power loom. Mills, with increasing capital in the trade, were built larger, and to save ground rent and get a better light as it was thought, were carried from five to eight and even nine storeys high. The Georgian Jubilee Mill in Blackburn, near the parish church, was an illustration of the latter. It was taken down a few years ago. Weaving and spinning were carried on in these high rooms, but ultimately it began to be recognised that the dryness and vibration of the building were utterly unsuited to the weaving process, and that conversely the steadiness and humidity found upon the ground were highly advantageous. Hence weaving sheds began to be constructed, and the two sections of the trade developed a tendency to separate into independent businesses—a movement which was stimulated and confirmed by the adoption of free trade as the commercial policy of the country. From 1850 to 1860 large profits were made in both branches, and numbers of small capitalists who were equal to putting down a few looms but not to the greater investment required in spinning, entered the trade. Hence to a large extent our separate manufacturing branch of the industry.

The spinning section of the business continued also to extend, and the construction of the mills were modified in accordance with the teachings of experience. The excessive height of mills was reduced, and after 1840 few were put up exceeding five or six storeys in height, whilst the area of each floor was greatly increased. This change was brought about by the invention of the self-acting mule by Richard Roberts, which eventually abolished the hand spinner and brought into existence the modern "minder," whose function it is to "mind"—take care of, or look after, the automatic mule, which had relieved him of the great burden of his labour. Mules were enlarged, coupled together, and extended until the number of spindles increased from 500 or 600 to 1,600 or 1,800, committed to the charge of one man and two or three boys. This necessitated the change in mill architecture referred to above. The long, narrow mills became obsolete, or at a great disadvantage

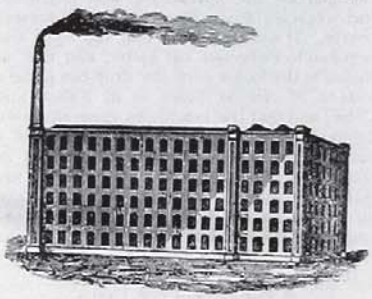


Fig. 2.

the new mills, in every respect larger, worked more economically. Our illustration, Fig. 2, shews the type of the mill in vogue until about 1870. It was first introduced by the late Sir William Fairbairn about 40 years previously, and with comparatively little change prevailed until the above date, when the continuous enlargement of the mule in its spindle capacity gradually developed a tendency towards the present prevailing type, in which the mill structure is almost square. Numerous illustrations of this form are found in the new mills of the Oldham Joint Stock spinning companies. This figure was not fully attained, however, until the rivalry commenced between the mule and the ring frame about 15 years ago. The extraordinary progress made by the latter in the hands of two or three leading makers, with whom it first became a commercial success, challenged the supremacy of the mule, and led the makers of the latter machine to put forth every effort to improve its productive capacity and economy in working, that it should be in no danger of supercession. One of these makers was Mr. Samuel Brooks, whose firm is supplying the machinery to the Stockport Ring Spinning Company. The alterations that resulted from the efforts of the mule makers fixed the present type of the mill for mule spinning, as we now find it in its principal manifestations in the Oldham district.

This brief sketch of the development of mill construction necessarily leaves unnoticed many important points, such as rendering fireproof, the automatic prevention of fires, ventilation, humidification of the atmosphere of the rooms, etc., etc. These, of course, it would be impossible to treat in an article of this description,

It may serve, however, to bring us down to the latest expression of the mill architect in response to the demands made upon him by the rival of the mule, the most perfect form of the ring frame. This we shew in the beautiful illustration accompanying our present issue. The architects, as indicated above, are Messrs. Stott and Son, Haworth's Buildings, Manchester. It is only proposed at the present time to erect one of them, on which work has been commenced, and good progress is being made. The site selected is a very eligible one in every respect. It is situated in Brinksway, and is bounded on one side by the siding land of the Cheshire Lines Railway Company, and on the other by the river Mersey, from which it enjoys a free water right. A deep basin of the river at this point will secure an unfailing supply for the service of the mill without the necessity of constructing either a weir or dam. Having in view the extensions of the railway sidings on to the Company's land, and the possible, if not probable, canalisation of the river at some future time, and its connection with the Manchester Ship Canal, the traffic arrangements have been made the subject of special consideration, and facilities provided so that, with equal advantage to the working of the mill, the rail, river, or road, or any of them separately, or any two, or all of them combined, may be utilised. The site has been acquired by the Company on very favourable terms, the plot being large enough for the twin mills shewn in our illustration. When the present design is fully carried out, the Company will possess as fine a pair of mills as can well be found in the country.

The mill in course of construction is 90 yards in length and of a width suitable to receive the greatest length of ring spinning frames that experience has hitherto shewn to be most advantageous. The height will be five storeys, with a basement under the whole of the structure. The rooms are so designed as to be spacious in every direction, and light, and will be well ventilated. The driving race divides the mill into two portions of unequal size, the smaller one to contain the cotton and scutching rooms, and the larger the carding and spinning departments. Provision is being made for lighting it by electricity and fitting it with automatic sprinklers. Messrs. T. and W. Meadows are the contractors for the whole of the mill buildings.

The boilers, four in number, are of the Lancashire type,—a deservedly universal favourite. They are being made by the old-established and well-known firm of Messrs. John Fernihough and Sons, Victoria Ironworks, Stalybridge, Lancashire. Their dimensions will be 30 ft. by 8 ft., designed and constructed upon the best and most perfect lines yet developed by the combined influence of theory and practice, to carry a daily working pressure of 160 lb. per square inch. Every care is being taken to combine strength and elasticity at the points where expansion and contraction demand it for avoiding wear and tear and prolonging durability. The material employed is Siemens-Martin steel, according with Board of Trade requirements. In the shell plates, eight in number, each ring forms one plate to prevent any longitudinal seam being placed below the flue brick covering. The circumferential seams are double rivetted, but the longitudinal ones are butted and fitted with covers and strips both inside and out to give double shear to rivets, and are rivetted with six rows. The flue tubes are 3 ft. 3 in. diameter, made with welded and flanged rings of furnace quality steel. Taken as a whole, the boilers, in material, construction, and fitting, are of an exceptionally high-class order, and will possess a factor of safety of fully 5 when working at a pressure of 160 lb. per square inch.

The contract for the engines is yet under consideration.

Messrs. Lord Bros., Todmorden, will furnish the opening and scutching department, which will include two bale breakers, two exhaust openers combined with single scutchers and lap machine, and four single intermediate and four single finisher scutchers. The high reputation of this firm as makers of this class of machinery is a guarantee that the Company's interests in this department are in excellent hands.

The entire of the remainder of the order for machinery has been placed with Messrs. Brooks and Doxey, and comprises 53,000 ring spindles and the requisite amount of preparation. The enterprise of this firm, and the steady manner in which it has bent its energies to the development of the system of ring spinning and doubling is well known, and has placed it in the front rank of makers of machinery for this system. As an interesting fact, we may mention that the firm was the first in this country to make this system of spinning and doubling machinery on a commercial scale. Since its first introduction from America in a somewhat crude state they have effected many improvements, all tending to establish the system in its now comparatively impregnable position as the best in existence for a given range of work.

The machinery being supplied by Messrs. Brooks and Doxey consists of the following:—

96	Revolving flat carding engines.		
4	Drawing frames of 24 deliveries	each.	
12	,, ,, 16	,,	,,
12	Slubbing frames 100	spindles	,,
20	Intermediate ,, 144	,,	,,
52	Roving ,, 180	,,	,,
140	Ring spinning ,, 376 to 380	,,	,,

The carding engines are on Wilkinson's patent system, of which Messrs. Brooks and Doxey are sole makers. We propose to give an extended notice of this card in an early issue, and therefore defer any remarks upon the principles of its structure until then. The following are a few particulars of details:—The main cylinders are 50 in. dia. and 45 in. wide on the wire. The taker-in is 9 in. dia. and the doffer 24 in. There are 106 flats of cast iron, 1⅛ in. wide, planed on both edges, and of these 42 will be continuously at work. The doffer comb is of improved construction, and a patented slow-driving motion for grinding, etc., is applied. The clothing for cylinder, doffer, and flats will be of hardened and tempered steel wire—the new patented bisectional wire manufactured by Messrs. James Walton and Sons, card clothing manufacturers, and which they have recently put upon the market.

Drawing frames have long been a speciality of Mr. Brooks's firm, and those supplied will contain the patented front and back sliver, and back knocking-off motions, all of which are on the positive principle and instantaneous in action. These frames will be geared at one end and supplied with cut roller wheels. The front line of rollers have loose bosses, and the frames are fitted with weight-relieving motions, in order to obviate the grooving of the roller leathers by their pressure upon the fluted rollers during the night, week-end, and holiday stoppages of the mill.

The slubbing frames are of 10 inch lift, 4 spindles in 17½ inches gauge, with loose boss top rollers in the front line, long collars, and separating plates. Each frame will be fitted with indicators.

The intermediate frames will also be of 10 inch lift, and contain 144 spindles each, 6 spindles in 19½ inch gauge, with loose boss top rollers, long collars, separating plates, and hank indicators, as in the preceding case.

The roving frames are of 7 inches lift, 8 spindles in 20 inches gauge, with loose boss top rollers, separating plates and hank indicators.

The firm have recently thoroughly overhauled their speed frames with the view of facilitating the alterations required in changing counts, and in every way possible to enhance the quality of the production. The result has been a number of important improvements in details, and all the machines named above will be made from the new models that have been constructed to incorporate them.

The ring-spinning frames are of 2⅛ in. gauge, with 1⅛ in. rings, and supplied with the firm's celebrated flexible "Union" gravity spindle. This spindle since its introduction has met with almost unprecedented favour, and the increasing demand has necessitated considerable extensions of the firm's capacity of production. The frames are supplied with two tin rollers, each 10 in. diameter, which are coupled at the off end by ropes, and furnished with tension screw appliances. This appliance diminishes the wear and tear of the banding, and greatly tends to secure positive twist in the yarn. The fluted rollers are mounted in specially inclined stands, an arrangement that the firm first introduced in connection with the spinning of weft on the ring frame, and which the writer of this article reviewed in connection with the Preston Guild Exhibition in 1881. This was a great step in advance, as it enabled the spindles to twist the rove right up to the nip of the rollers before it felt the drag of the traveller, and was subjected to the friction of the thread wire. Up to that time this drag had caused such a number of breakages of the yarn as to seriously jeopardise the future of spinning on this system. The firm have also conducted a long series of careful experiments in connection with the inclination of the roller stands and the distances between the roller centres, and most valuable results have been attained, which enables them, when informed of the class of cotton it is intended to work upon the frames, to so adapt the means to the end as to secure the highest possible result in both quantity and quality of production. The machines are strongly built throughout with angle beams, girder rails, and lever lift, and the ring plates are fitted with the firm's patented adjustable traveller clearers, and the thread boards with the patented arrangement for instantaneously lifting them up at one time so as to leave the way clear for doffing.

It will be obvious from the above description that the Stockport Ring Spinning Company will commence its industrial and commercial career with a grand mill, magnificently equipped and in possession of every internal and external convenience calculated to facilitate the success of the management. Architect, builders, and machinists will have done everything humanly possible to ensure their prosperity. The further elements of success are in the control of the shareholders themselves. These consist of an efficient board of directors, and an intelligent, sound, practical manager, acquainted with both the practical and commercial economy of the cotton trade. A good inside man is not necessarily a good outside man, nor *vice versâ*.

Every day makes it more clear than before that under certain circumstances and for certain ranges of work the ring spinning system is not only consolidating the position it has already secured, but is increasing its conquests. During the last few years quite a number of important mills have been specially erected in this country for this system, whilst many more have been put up abroad. Amongst the

former may be mentioned the new mill built for Messrs. Eckersley, of Wigan, who entrusted Mr. Brooks with the order for furnishing same with 60,000 ring spindles, and the whole of the required preparatory machinery in drawing, slubbing, intermediate and roving frames. Since then the firm have filled many important contracts, and are engaged upon numerous others. Amongst these may be mentioned the Burns Mill, Heywood, consisting of 35,000 ring spindles, and all the carding, drawing, slubbing, and roving frames constituting the preparation from the point mentioned; and again, the Stockport Ring Mill under notice. These facts sufficiently demonstrate the accuracy of the statement made above regarding the extension of ring spinning, and they also prove at the same time that a large proportion of the extension is being provided for by the firm of Mr. Samuel Brooks. The firm are also furnishing the Castle Spinning Co., Stalybridge, with the drawing, slubbing, intermediate and roving machines for their new mill, containing 100,000 mule spindles.

The firm of Samuel Brooks, whose work needs no commendation, being known all over the world in every respect that can be named, we have pleasure in announcing, has just now, with the advent of the New Year, changed its style and title to that of Brooks and Doxey. It may not be amiss in this connection and in view of this announcement to add, for the benefit of our more distant readers, the information that Mr. Richard Alexander Doxey, who has acceded to the firm, is a son-in-law of the late Mr. Samuel Brooks, and for many years was his chief assistant. Naturally, therefore, the principal conduct of the extensive business, on the comparatively early death of Mr. Brooks, fell into his hands. And it is not too much to say that it has ever since been conducted with a continuance of the extraordinary energy that was so characteristic of the management of the founder. Mr. S. H. Brooks, son of Mr. S. Brooks, and Mr. Doxey, will constitute the firm. We are sure all our readers will join with us in the best wishes for its long life and prosperity.

Reviews of Books.

DIARY AND BUYERS' GUIDE, 1892. Manchester: Messrs. H. Bannerman and Sons, York-street, Manufacturers and Merchants.

This charming little annual, the merits of which no one would gather from its title, is again before us. Its appearance must be anticipated with pleasure by all the customers of the firm who take the slightest interest beyond a commercial one in the articles in which they deal. Each issue in succession has contained a delightfully-written description, copiously illustrated, of one phase or another of the textile industries. Those already treated will be indicated by the titles of the papers. They are: "From Cotton to Cloth;" "Calico Printing;" "From Fleece to Flannel;" "From Flax to Linen;" "How a Lace Curtain is Made;" and now we have another, "Concerning Velveteen." As in all preceding instances, the subject is handled in the clearest manner, so as to render every process easily comprehensible to the dullest intellect that could feel sufficient interest in the subject to take the book in hand. Every machine used in the processes, from the spinning by the mule to the cutting of velveteen by machinery, is beautifully illustrated, and many of the hand processes as well. With nearly all the machines the operatives are shewn at work, the illustrations being taken from photographs of actual interiors during working hours. The text for which the illustrations have been made descants upon the origin of the name of velveteen, allocates the fabric to its proper place, and puts it into the class of 'Manchester cottons'—a grouping which is strictly accurate, and the latter a term of ancient association with this city. Much curious and interesting information is brought together, which though well known to experts in the history of the textile industries, will not be any the less novel to those for whom this work is intended. It is when Mr. Mortimer approaches the description of the processes that he relies entirely upon himself. Here we would compliment him upon the accuracy with which he has apprehended every point in the complex procedure of the manufacture and the intricate machinery, and the delightful simplicity with which he lays each before the reader. There is no misapprehension, not even a slip, so far as a rapid perusal has revealed to us. The merits of these papers lift them indeed far beyond the laboured efforts of the ordinary descriptive writer, and constitute them prose poems of the textile trades. They are idylls of industry, and as such should be cherished by everybody interested in their subjects. We shall be sorry when Mr. Mortimer has got through the list of the subjects in the textile trades that he deems suitable for his readers.

Designing.

NEW DESIGNS.

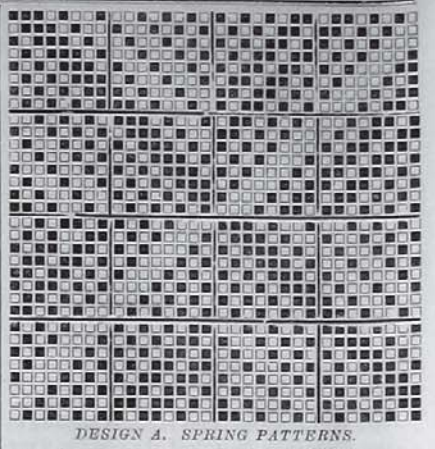
SUGGESTIVE DESIGNS FOR SPRING PATTERNS.

The new year will open out extreme novelties in many-coloured diagonal cross stripes, large squares in splendid colour combinations, like dark heliotrope, ground with transverse stripes in corn-flour blue, pearl, or blue-grey and rose, stone-grey, ash-grey, bronze and plum, and clan-tartan effects. Cotton canvas in neutral shades, as well as those in decided dark colours, form very serviceable dress goods, for daily wear; white and printed muslins, zephyrs, and fancy prints will become popular in the late spring. Skirting cloth patterns in dark blue canvas are being prepared. The old-fashioned muslin will be introduced as a new fabric for composing entire costumes in white or cream, forming a delicate back-ground for coloured floral sprays, which will be designed and woven in the muslin or cambric. These transparent fabrics will be made up into fresh gowns for wearing on almost any occasion, the under attire being of woollen material. Clean white or cream muslin will be the leading tissues for evening gowns, with girdles of very wide silk ribbon fastened with a bow, the ends reaching to the extreme edge of the skirt. The brightest colours are so far confined to indoor uses; plain dark colours, as navy blue, bottle green, and seal brown, with every description of neutral tints, are worn for walking costumes.

Design A will give a good fabric, made with 20's cotton warp and weft, 40 dents per inch, two in a dent, 80 picks per inch of weft, woven grey, and well bleached (a bleach with a decided pale blue cast); if coloured in the warp, very light tints or good contrasts of light upon dark grounds. A pretty arrangement would be (1st) Venus-blue ground warp, light cinnamon weft; (2nd) vivid spring-green warp; Velasquez (a new name for dark salmon pink) as weft; (3) light magenta red warp; light greenish-blue weft; (4) dark lilac warp, white weft.

These combinations, out of many that might be mentioned, will afford a sufficient idea of how beautiful effects may be created if the colours are bright and materials good.

Design B: Same particulars of quantity in warp and weft as *A*. It will be seen by the draft being on two sets of heald shafts that the squares may be extended by repeated draws on each separate set, and increasing the pegging plan. There are four distinct weaves, and all may be woven grey, bleached, and piece-dyed; or each square in warp and weft may be opposing colours. As the design stands, 16 ends may be blue, 16 ends dark yellow; weft, 16 brown, 16 white, or any arrangement fancy may dictate. Simply observing some regard for harmony, all the shades mentioned in *Design A* can be used, as it is only a variation in weaves, the fabric produced being more



DESIGN A. SPRING PATTERNS.

open in texture, cloth of this porous nature being very much fancied by the votaries of fashion. Both designs would give a capital effect in fancy skirting cloths, and are well worth a trial.

Design C is given as a suggestion for contrast in warp and weft; dark or light grounds with opposing shades or tints, such as dark blue warp, cop weft, or dark brown warp, cop weft; the reverse may obtain—grey or cream-coloured warp, weft dark shades, 30 dents per inch, two in a dent, 20's cotton for warp, 60 picks per inch of 16's cop or 20's weft. These counts and qualities are given as a guide to work from; more picks may be requisite for finer materials; at all events, it is much easier to alter the weight of the weft, or to bring it in proportion to the warp, according to the weave or other circumstances.

Design D is a fancy diagonal, which can be broken up into very effective patches by the pegging plans 1 and 2. Warp, 24's cotton, 30 dents per inch, three in a dent, drawn on 8 shafts, one double end, one single; weft, 16's or 20's soft cop, piece-dyed in all the fancy colours, or well bleached; good spring pattern for dress materials.

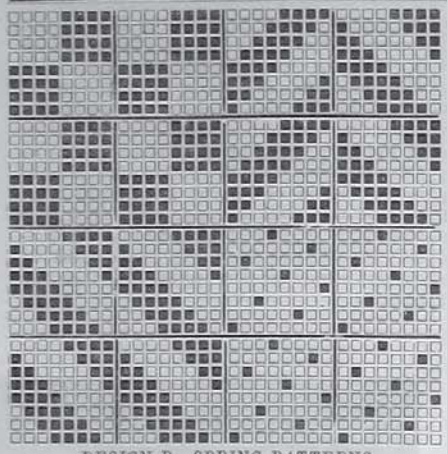
NOVELTIES IN WOOLLENS AND WORSTEDS.

In a recent issue of *The Textile Mercury* attention was directed to the introduction of mohair into coatings, trouserings, etc., as an ordinary or extra weft. In the present number we propose dealing briefly with rather uncommon methods of utilising extra weft, affecting more particularly the colourings applied to the ground fabric. First, however, the designs here given, *Nos.* 1, 2, and 3, merit description as applied to solid colourings. *Design* 1 simply consists of a fancy two-and-two twill figure, arranged in 5-end sateen order, on a two-and-two twill ground. The idea here is that the ground fabric shall be formed of some semi-lustrous material such as English wool, while an extra weft of soft woollen yarn shall interweave (as indicated by solid type) with the English warp. The result should be blurred spots upon a clear ground, such spots being either the ground colour or some other harmonising colour; in fact, by changing the colour every eight picks each sateen spot might be developed in a distinct colour. Of course the procedure might be exactly reversed, the ground fabric being woollen and the spot worsted or mohair, but under these circumstances the spot should be considerably enlarged, otherwise it will be entirely lost.

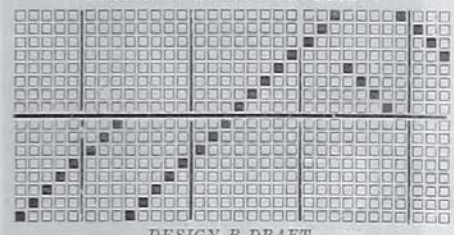
Design 2 admits of the same treatment as *Design* 1, though of rather simpler construction. If the extra weft be 1 dark, 1 light, the spot will be developed in the two shades.

Design 3 is a bolder effect, yielding in the actual cloth a diamond shape, the centre of which is formed by the extra material, which may be either woollen, worsted, or mohair, as indicated for *Design* 1.

Such treatment as the above will yield somewhat novel effects, but the following suggestions should yield results still more so. Suppose, for

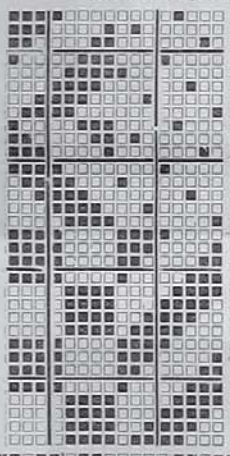


DESIGN B. SPRING PATTERNS.

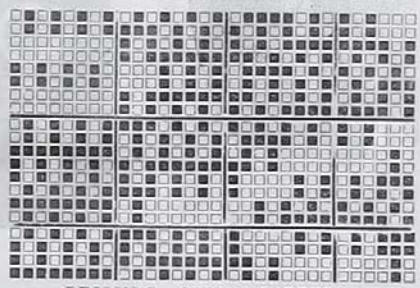


DESIGN B DRAFT.

DESIGN C PEGGING PLAN.



DESIGN B PEGGING PLAN.



DESIGN C. SPRING PATTERNS.

DESIGN C DRAFT.

example, that the following colouring be applied to *Design* 2 :—

1	thread	black,	1	thread	white,
1	,,	grey,	1	,,	black,
10	,,	black,	1	,,	white,
1	,,	white,	10	,,	black,
1	,,	black,	1	,,	grey,
1	,,	white,	1	,,	black,
2	,,	black,			

then, with the same colouring for the ground weft, it will be evident that the check formed on the black ground by the four white threads will be interrupted and broken by the extra weft spot.

Design 3 may be treated in a similar manner, or as follows :—

Warp.

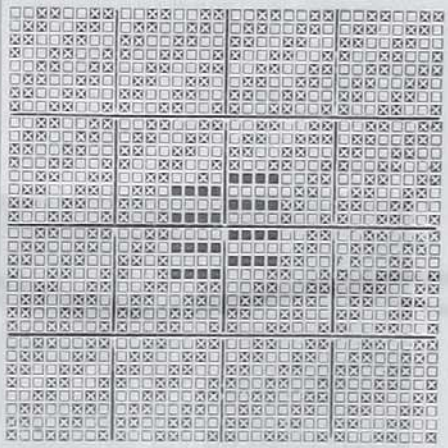
All 2/30's black English ; 16's reed 4's.

Weft.

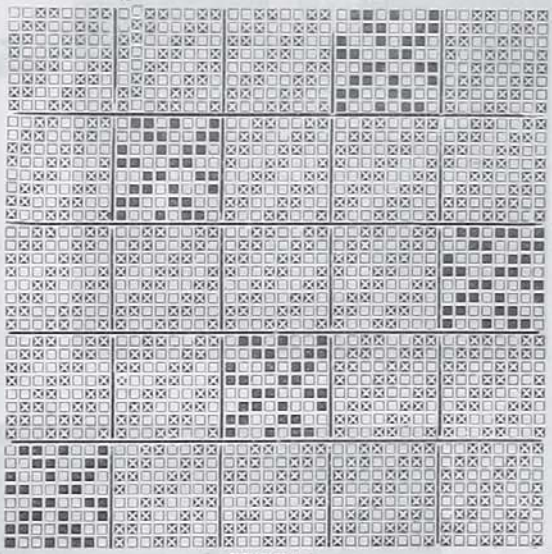
1 pick 15's white English,
1 ,, 26 sk. soft black woollen,
About 60 ground picks per inch.

The 26 sk. woollen may only be inserted for the figure, but preferably throughout as a backing, thus materially adding to the "handle" of the cloth, so that throughout these three designs, when the extra weft is not on the surface, it should be bound in the most regular order possible.

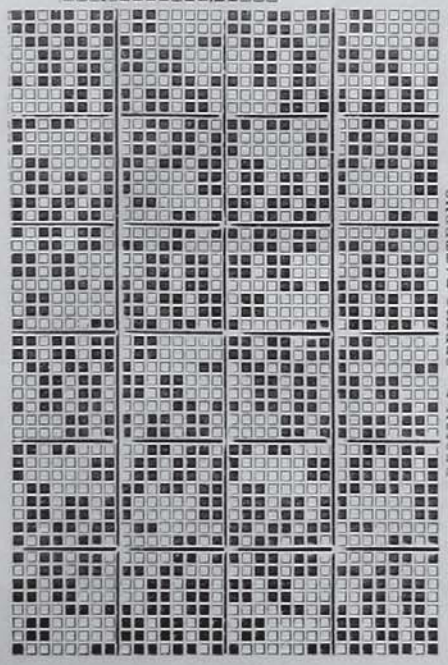
Should the above scheme of colouring be adopted, the lines will be changed from the horizontal and vertical to an angle of 45 degrees to the right and left, the diagonal check so formed being broken in the centre with the solid black weft and warp. From these suggestions others will no doubt arise which will prove equally effective, attention being given to the two chief points—colour and material.



DESIGN 2.



DESIGN 1.

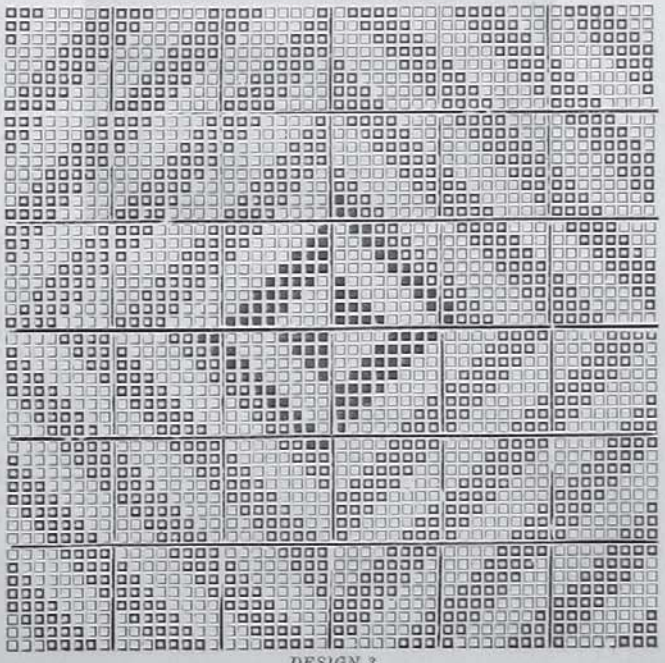


DESIGN D. SPRING PATTERNS.

DESIGN D PEGGING PLAN, No. 2.

DESIGN D PEGGING PLAN, No. 1.

DRAFT D.



DESIGN 3.

Machinery and Appliances.

THE ECONOMICAL TRANSMISSION OF POWER.

THE UNBREAKABLE PULLEY AND MILL GEARING CO., LIMITED, WEST GORTON, MANCHESTER.

The economical generation of steam power, and its transmission without loss, or with a minimum of loss, to the machine it has to put in motion, is one of the most important subjects to which those most deeply interested in the successful conduct of spinning and manufacturing establishments can turn their attention. Notwithstanding the improvements that have of late years been made in this respect, there undoubtedly yet exists a large margin of leakage on which gain can be made. In the first place, for the best means available, perfection, consisting of the absolute elimination of loss, is not claimed, nor even is that approximation thereto yet reached in which a reasonable allowance is made for loss by absorption of power in its transmission. In the second place, in relation to even the best economical appliances hitherto devised, owing to that dull inertia which refuses to see and appropriate a benefit when it is placed before one, these are not yet applied to any important extent. It is a subject upon which steam users, however, should fix their attention for a time at least occasionally.

Experts have found that in a large mill, with shafting running in the ordinary rigid bearings, there is of necessity a good deal of binding, heavy friction, and consequent absorption and waste of power in turning the shafts and pulleys alone. This varies from $\frac{1}{10}$th to $\frac{3}{4}$th of the power delivered by the engine. This is the fund of loss which needs diminishing, and if any important reduction is possible, it ought to be worth the while of steam users to ascertain how it can be accomplished.

The Unbreakable Pulley and Mill Gearing Company, Limited, of Gorton, Manchester, have issued a *brochure* on the subject of the economical transmission of power, and in it set forth the methods by which they attain a saving of five per cent. in the cost of the year's coal. This is a modest way of putting the claim, because such a saving must mean much more than five per cent. of the waste indicated above. We take the opportunity of bringing the matter before our readers.

In the first place, then, in the equipment of an establishment they furnish shafting of a very fine quality of steel, in which the diameter and consequently the weight to be set and continued in motion is greatly reduced in comparison with the shafting in ordinary use. The alteration in this direction naturally diminishes also in the same proportion the amount of friction in the bearings. This is a clear gain of no mean magnitude, and it is not counter-balanced by any set-off of loss, as some might infer, because this steel shafting, even when thus reduced, is 50 per cent. stronger than the ordinary wrought-iron shafting in common use. A decided advantage thus accrues from these two sources.

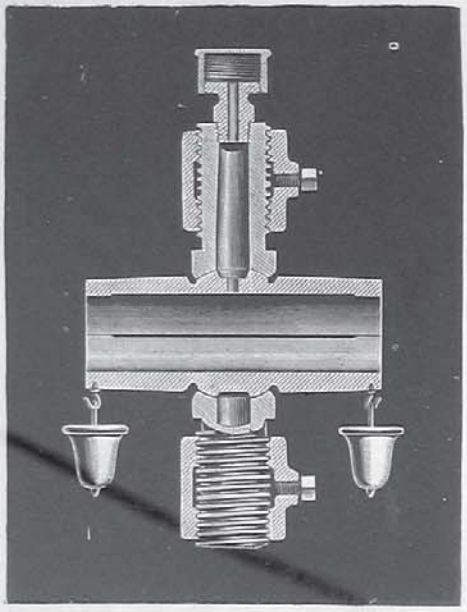


FIG. 1.

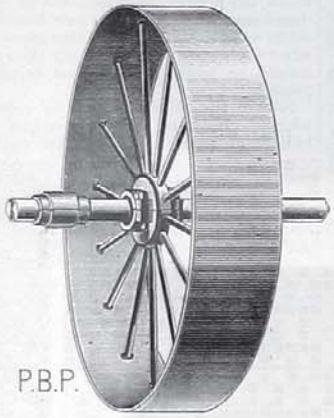


FIG. 3.

FIG. 2.

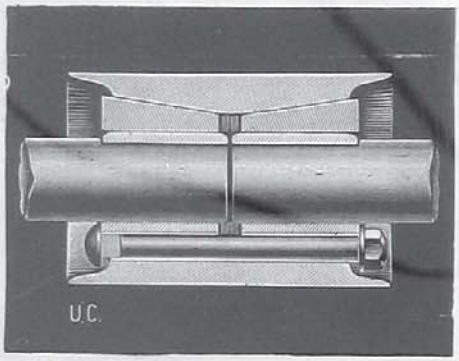
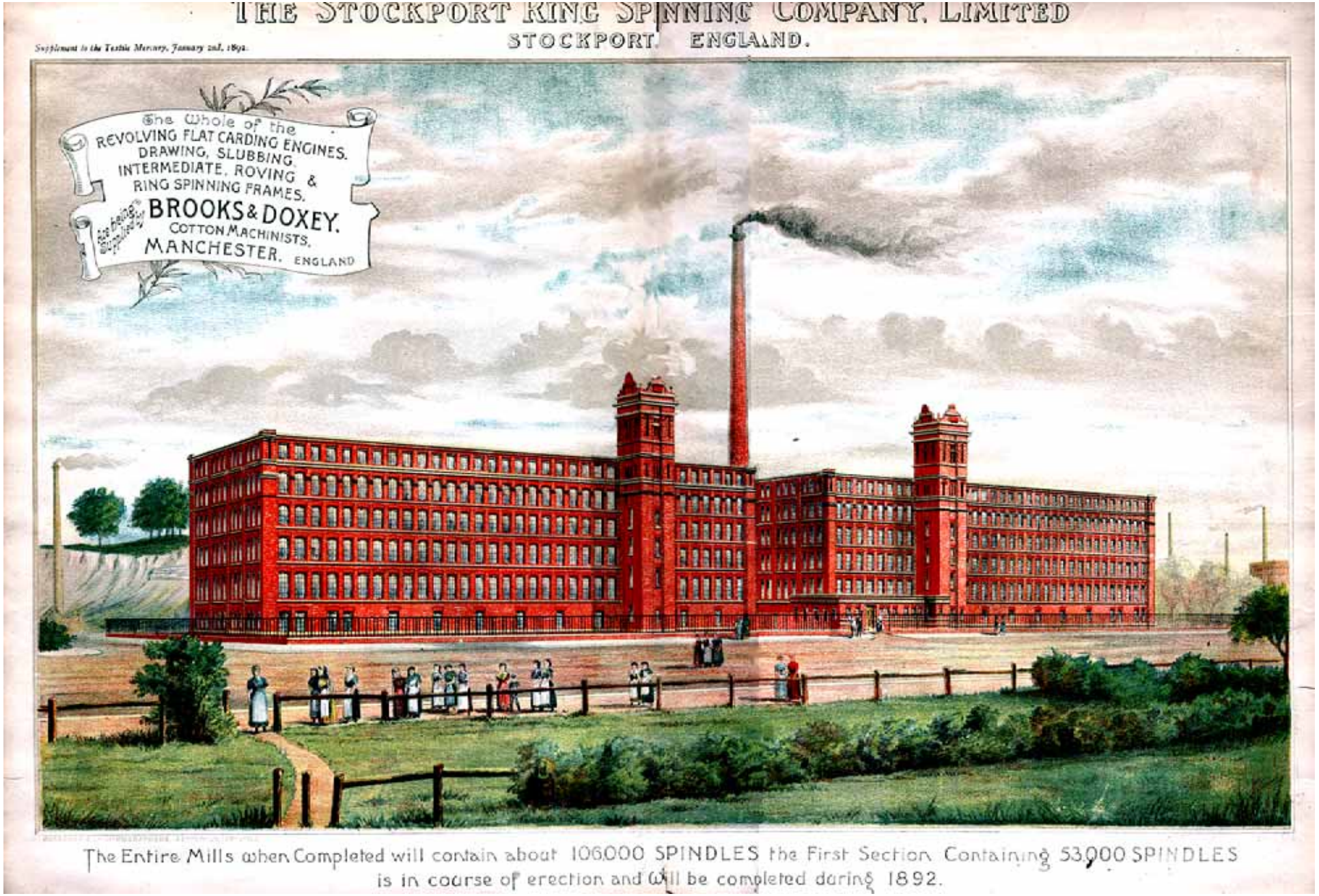


FIG. 4.

FIG. 5.

We now come to the next feature of their method. Shafting, as is well known, is subjected to two kinds of strain: first, the torsional strain by which the engine has to overcome the inertia of the gearing and to operate the machinery; second, a bending strain resulting from the pull of the belts and the influence of gravitation acting upon the shafts themselves, and the pulleys and wheels they carry. In addition to these, we may adduce the well-known fact referred to above that unless shafting is fitted truly in line, and wall boxes, pedestals, and hangers are truly adjusted to them, binding and consequent friction and loss of power must occur, and, as a matter of fact, do arise from this source very frequently.



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These points they meet, and obviate their difficulties by the adoption of bearings that permit of an appreciable amount of liberty of self-adjustment to the requirements of the occasion. In fact they may be called flexible, as they will permit of a slight swivelling and rolling movement. The construction of one of these adjustable swivel bearings is shewn in section in Fig. 1. It will be seen that the ball and socket arrangement adopted allows the step to move in any direction sufficiently far to accommodate itself to the strain upon the shaft, and yet that the centre point originally fixed in line will not be disturbed. It thus becomes impossible for the shaft to bind, and by this simple yet effective expedient, an immense amount of friction is avoided. Thus another great cause of power waste is obviated. Bearings on this principle may be made of almost any length, and the load per square inch be so regulated that their durability becomes practically unlimited. The ubricant can also in this arrangement much more perfectly perform its proper service in maintaining a uniform dispersion in a thin film over the friction surfaces. Heavy pressure and grinding being removed, it does not get squeezed out in the same manner as in the older arrangement. The Company, from economical considerations, recommend the solid oil lubricator, and preferably the arrangement in which a small weight maintains the communication.

The requirement of perfect adjustment in the arrangement of shafting needs no enlarging upon. It is a necessity if good work and durability has to be the outcome. The Company whose productions we are noticing have endeavoured to render it easy to accomplish in the first instance, and to maintain ever afterwards in the not infrequent case of the subsidence of foundations, the cracking of a wall, or its casting from the vertical position. The original disposition and the re-arrangement in the latter cases is accomplished by means of adjusting screws, shewn in Fig. 2, which render it an easy matter to set a line of shafting perfectly level, whilst they dispense with the trouble of "packing up" altogether. The makers claim that four bearings of this kind can be fixed and set in the time taken to erect one of the old style. By the use of these screws, combined with the ball and socket construction of the bearing, the erection of shafting is rendered marvellously easy and simple when contrasted with the old-fashioned style of doing the work. In the times to which we allude, a spinner or manufacturer getting the engineers in his establishment was always unfeignedly thankful when he saw their backs turned towards his door and their figures receding in the distance. In fact, the erection and adjustment of shafting is, we are assured by the firm whose productions are under notice, so simplified as to be brought well within the powers of an intelligent labourer. In actual practice it has occurred that seven of these bearings have been accurately levelled by a carpenter and labourer, both quite new to the work, in the short space of twenty minutes. By putting down special appliances for the manufacture of these swivel bearings, the Company is able to place them upon the market at prices actually lower than most people supply ordinary rigid ones. Thus, on the side of both superiority and economy, they demand the attention of users, and that they have already gained this to a large extent is demonstrated by the great quantity that has gone into use.

The next article we notice is the wrought-iron pulley. By the use of these pulleys, illustrated in Fig. 3, in place of cast-iron ones, the weight required to be turned by the engine may be further reduced, the proportion in weight between the two are, as a rule, 2 to 1 in favour of wrought iron, and in larger sizes it often reaches 3 to 1. These pulleys are made in absolutely duplicate halves, so that when the pulley is bolted upon the shaft it is found to be in perfect balance, a result that can rarely be attained in a casting, yet absolutely necessary if rapid wear is to be avoided. The substitution of wrought iron for cast in the construction of pulleys is an unmixed advantage, as it has obviated all cracking and chipping of rims and all risks of bursting—a not uncommon accident with those of cast iron. The firm make all pulleys in sections, and at this time of day it is unnecessary to enlarge upon the advantages of this method of construction beyond stating that the cost of removing or putting on a solid pulley often doubles its price.

The old-fashioned method of shaft coupling has been discarded by the Company, which has adopted Sellers' compression coupling as its standard, and it has put down special tools for their production. In Fig. 4 one of these is shewn in section. Two taper bushes are bored out to fit the shaft ends, and are cut through at one side in a parallel direction, so that when drawn into the outer shell, which is bored taper to receive them, they grip the shaft, and are in turn gripped by the outer shell. The drawing of the ends of the shaft together is effected by three bolts passing through the bushes and shell, and when properly tightened up this coupling never slips, or otherwise gives trouble. It can easily be taken off at any time, and all projections being shrouded, there is no chance of anything getting entangled upon them. Both of the coned seats in the shell are bored at one setting, and each cone being turned on a standard mandril, they must of necessity be self-centring, and must always bring the ends of the two shafts in one line.

The Company have introduced the swivel principle into all their standards, namely, in pedestals (Fig. 5), hangers, wall and pillar bearings, and wall boxes. All are made in absolute duplicate, and a large demand can always be immediately supplied, as stocks are kept of those sizes most in request. Since their introduction a large and increasing demand has been experienced for them, which is the best testimony that need be offered of their merits, and the advantages that result from their use.

Bleaching, Dyeing, Printing, etc.

NEW COLOURING MATTERS.

We have lately received a number of samples of new colouring matters, a description of which will be of interest to the readers of *The Textile Mercury*.

From the well-known Huddersfield firm of Read Holliday and Sons we have received samples of two new dye-stuffs which they have just placed on the market. One of these is

Vacanceine Blue.

Vacanceine is the special name given by this firm to the colours produced direct on the fibre by their patent processes, and which are favourably known for their brilliance and fastness. The new blue which they have just placed on the market is a patented speciality. It dyes tannin-mordanted cotton. The dye-stuff is sent out in the form of a paste. It is comparatively a strong colouring matter, 2½ lb. to 100 lb. of cotton dyeing a nice shade of blue, while 12½ lb. gives a deep shade. Dark navy blues are obtainable from vacanceine blue by using a mordant of myrabolams and iron, and dyeing with 12½ lb. of the new blue. The dyeing is best done by preparing a dye-bath with from 2 to 3 lb. of alum for each 100 lb. of cotton. Enter the latter cold, and, after working for a short time to get the cotton thoroughly impregnated with the dye-stuff, raise to the boil, and work at that heat for about half an hour. The pale shades are not very bright, but the dark shades are very good. The colour is very fast; it rubs a little, but not any more than a good indigo will; strong acids turn it a little darker, but dilute acids have no action; caustic soda reddens the shade a little. Soaping has no action, which is a valuable feature, as resistance to soaping is one of the most important properties a dye-stuff can possess. Vacanceine blue is well worth the attention of cotton dyers; we believe it is a cheap colour, and, in respect to cost, will compare favourably with many of the coal-tar blues now in use.

The second colour sent out by Messrs. Read Holliday and Sons is the latest of their Titan series, and is named

Titan Blue.

This is dyed on to unmordanted cotton by boiling in a bath containing salt, 2% of the blue giving very dark deep shades of navy blue. The colour goes on easily, and the dye-bath is fairly well exhausted. Unfortunately the shades obtained, while deep, are not fast, in which respect they differ from the other Titan colours sent out by the firm. Soaping causes the colour to bleed considerably; acids darken it, while caustic soda turns it a bright red.

The Farbenfabriken vorm. Fr. Bäyer and Co. are noted for the large number of new dye-stuffs which they from time to time place on the market. As a rule these are generally good ones, the firm objecting to sending anything that is not fast or that has not many good points about it. The latest dye-stuff is

Azo Acid Brown.

This dye-stuff is used for dyeing wool and silk, employing the usual acid baths. The colour goes on evenly and well, and a slight excess of sulphuric acid does not make much difference in the evenness of the dyeing. The colours given by this dye-stuff are a very yellow shade of Bismarck brown; 1 % gives a nice yellow shade of fawn; and 2·5 % a good shade of brown. Acids turn the shades a dark brown, and caustic soda a red; they are not fast to soaping, which causes some bleeding In combination with acid violet it can be used for producing olives and bronzes; with azo fuchsin it gives bright maroons. The dye-stuff itself is a pale yellow-brown powder, only slightly soluble in cold water, but easily soluble in hot water to a dark yellow-brown solution, from which hydrochloric acid throws down a dark brown precipitate, while caustic soda has no action. Strong sulphuric acid dissolves it, with a very deep violet blue colour; on adding water to this solution a dark brown precipitate falls down. It is unfortunate that this dye-stuff is not fast to soaping, or it would be of use in dyeing goods which have to be milled, but for those which are not to be so treated it will be found a useful colouring matter.

Acid Violet 5B

Is a new brand of the well-known acid violets, dyeing a bluer and somewhat brighter shade of violet than any which have hitherto been placed on the market. The dyeing is done in the usual manner on wool or silk: 1 % gives a good full shade of violet, so that the dye-stuff is a comparatively strong colouring matter. It can also be combined with other acid-dyeing colouring matters to form a variety of useful shades; thus with fast green bluish a good blue is obtained, while by using a mixture with azo fuchsin G and fast green bluish in small quantity, a very nice lavender results. So far as its properties are concerned, acid violet 5B resembles the acid violets already known.

The same firm also send out two new dye-stuffs, which are very well adapted for calico printing or wool dyeing, for the former especially. One of these is

Chrome Blue.

This dyes wool that has been mordanted with bichromate of potash and oxalic acid. It is necessary that a deposit of the green oxide be formed on the wool—not a deposit of the chromic acid, as this has an oxidising action on

the dye-stuff, which spoils the shade. When well mordanted a fine blue of a violet hue is obtained. The colour resists soaping, there being but little if any bleeding, while the shade is brightened by the operation; in this respect the colour compares favourably with the alizarines. Acids turn it red. In calico printing the dye-stuff is applied with a chrome acetate mordant in the usual way, and it gives a very fine blue. For calico printing it is likely to come largely into use.

CHROME VIOLET

Is the second-dye-stuff referred to. Like the chrome blue just noticed, it is capable of dyeing wool that has been mordanted with green oxide of chrome from a bath of bichromate of potash and oxalic acid. It dyes a red shade of violet, which is fairly fast to soaping, the colour being brightened thereby. Acids redden it, while alkalis brighten it a little. For calico printing it is used, like the last, with a chrome mordant. A very fine red shade of violet is obtained by using 62 parts of the thickening made from starch, tragacanth, and acetic acid, 30 parts of chrome violet, and 8 parts of acetate of chrome of 32° Tw. Print, steam, then soap, wash, and dry.

Both chrome blue and chrome violet are sent out in the form of paste colours, which, however, on being heated with water dissolve pretty freely. Both should meet with a good reception, especially from calico printers, as they are capable of being mixed together, and with other dye-stuffs applied in the same way produce a variety of compound shades.

From the Berlin Anilin Company, as it is familiarly known in this country, we have received samples of three new colouring matters. The first of these which we shall notice is

SALMON RED.

This belongs to the direct cotton dyes, and, as its name would indicate, dyes salmon colours. For producing a pale salmon of a bright red tone it takes only about ½%, dyeing in a salt bath. With larger quantities, shades of orange brown are obtained, but for dark shades this colour is not likely to be so largely used as for pale tints. The shades are not fast to acids, which turn them a violent red, while alkalis make them brighter and rather yellower in tone. They are not fast to soaping, although there is not much loss of colour. The dye-stuff is sent out in the form of a scarlet powder, readily soluble in hot water to a scarlet solution, from which acids throw down a purple-brown precipitate, and caustic soda a faint red precipitate.

The second colouring matter is

GAMBINE,

Which name, like the last, is rather unfortunate —(salmon red being the name of a dye-stuff made by the Badische Anilin Co., which is dyed in much the same way, but whether the two are identical we cannot say). Gambine is the name of a patented dye-stuff sent out by Messrs. Read Holliday and Sons in several brands. Both firms' gambines are dyed in the same way, and give very similar results, but the appearance of the two is not the same, the Berlin gambine being a green paste, while that of the Huddersfield firm is a dull olive brown. Gambine dyes wool that has been mordanted with chrome a good shade of brown, while with a copperas mordant a very nice bright green is obtained; and a combination of the two mordants will give a deep brown. One merit, and that an important one, is that both the green and brown are quite fast to acids, alkalis, and soaping, and are tolerably fast to light. One rather interesting point about the gambine colours is that if a piece of wool, dyed green with gambine, be boiled with a small quantity of bichrome, the colour is turned to brown, just the same as if the wool had been mordanted with bichrome and not iron. On the other hand, if a brown-dyed wool be boiled with a considerable quantity of copperas the colour turns green, although the change from brown to green is never so complete as the change from green to brown.

The third dye-stuff which has lately been sent out by this firm is

FLAVAZOL,

From which name many users of dyes will quite correctly come to the conclusion that it is a yellow colouring matter. It belongs to the class of mordant-dyeing colouring matters, and with chrome—applied either in a bath of bichrome and bisulphate of soda, or as fluoride of chrome—it gives an olive yellow; with alumina and tinsalt mordant it gives a Persian-berry yellow shade. Acids slightly redden the colour of the dyed wool, but caustic soda has no action, and the colour is quite fast to soaping, which is a valuable property. The dye-stuff is sent out in the form of a powder of an orange yellow colour, soluble in water to a lemon yellow solution, from which acids throw down a buff-coloured precipitate.

Messrs. Kalle and Co., of Biebrich, have placed on the market a new red dye-stuff under the name of

ROSINDULINE SS.

This belongs to the same class of colours as the azo-carmine which was sent out by another firm some years ago. It dyes wool or silk from acid baths in the usual manner, giving very fine bluish red shades, which are but slightly affected by soaping. Dilute acids have no action, while strong acids just make the shade a little darker, and alkalis make them duller. For dyeing bright reds and pinks on wool and silk this new dye-stuff will be found useful. With other dye-stuffs, such as fast yellow and cyanine, it gives some very useful compound shades: thus, with those just mentioned, a very warm oak-brown is obtained, while with fast yellow and indigotin warm buffs are obtained.

The same firm have also sent out a new blue dye-stuff—

NAPHTHYL BLUE,

Which dyes wool and silk some very nice bright blues; on silk especially the shades are very fine. The tone of blue is slightly violet, something like what may be obtained from a red-shade soluble blue. The merit of the shades lies in their being fast to acids, alkalis, and soaping, in which particulars they have a decided advantage over soluble blue or the alkaline blues. With other acid-dyeing colouring matters it can be combined; thus with azo yellow a nice slate green results. The dye-stuff is sent out in the form of a purple, somewhat bronzy, powder, which is readily soluble in water, from which solution both hydrochloric acid and caustic soda throw down bluish precipitates.

A similar dye-stuff from the same makers is

NAPHTHYL VIOLET,

Which dyes wool and silk in the same way from acid baths, giving bright red shades of violet. Naphthyl violet comes into the market in the form of a purplish black powder, soluble in water, and this solution gives violet precipitates with acids and alkalis. The dyed shades are fast to acids, alkalis, and soaping, so that for dyeing wool which is to be milled this new dye-stuff will be found very useful. Naphthyl violet can be combined with other acid-dyeing colouring matters, and some useful shades can thus be produced.

Both naphthyl blue and naphthyl violet appear much redder by gas-light than by daylight; in very pale shades the blue becomes violet, while the violet turns to heliotrope.

THE INDIGO COMPANY, LTD.

The ordinary general meeting of the shareholders of the Indigo Co, Ltd., was held on Tuesday at Cannon-street Hotel, London, Captain Louis Geneste presiding.

The SECRETARY (Mr. Benjamin Carr) having read the notice convening the meeting,

The CHAIRMAN, in the course of his address, said: "The shareholders were last year informed why we were unable to work the company's process in 1890, and of the purchase of the Luckeeserai factory, to enable us to work the process quite independently of other people, experience having shewn the impossibility of our doing so satisfactorily at other people's factories in conjunction with them. We were glad to find at the last meeting that the shareholders, although regretting equally with ourselves the cause, still fully approved the course taken by the directors in discontinuing working at Begum Serai and Khan Mirzapore, although, like the board, they quite realised that such a course involved a considerable loss to the company in plant and buildings, which was, however, quite inevitable under the circumstances. The buildings had necessarily to be abandoned, as also all portions of the plant and machinery which were not removable. Of the movable plant and machinery our manager took to Luckeeserai all that was necessary for working that factory to the best possible effect. The proprietors of Begum Serai purchased, at a fair price, about £300 worth of the plant, which by the agreement they had a right to do, and the remainder had to be taken away or stored at the nearest town—Mozufferpore. A portion of the latter has since been sold; but a large part remains on hand, and would be available for use in other factories if the company should decide to work it in the future, or for sale to planters who may hereafter work the process on royalty. The auditors, unfortunately, place very little value on this plant now, although it cost the company a large sum of money, and may eventually, as I have said, become useful. In such a case the increased amount realised will go to the credit of profit and loss.

"I turn now to Luckeeserai, our new factory. Our manager in India has used his utmost exertions to make it a perfect and really model factory for working the company's process, and, we believe, has quite succeeded in doing so, and in a good season we may look forward to the most successful results in the manufacture of indigo there But, as stated in the report, we have, during the last season, been subjected to a most unusual and adverse visitation of Providence, in the shape of a plague of locusts, which arrived in that district and destroyed nearly all the indigo plant of ourselves and neighbouring planters just when it appeared to be most promising. Great cause of regret as this has been to the directors, I am sure that the shareholders will recognise that it has occurred through no fault or neglect on their part, or on the part of their manager in India, nor from want of any precautions they could have taken, as the visitation was quite sudden and utterly unexpected. Many of the factories in the neighbourhood of Luckeeserai, although possessing larger cultivation than Luckeeserai, lost nearly all their plant absolutely, and were unable to manufacture any indigo at all, or scarcely any. For example, at one factory possessing 1,000 bighas of cultivation, they only succeeded in making one and a half maunds of indigo; others suffered similarly and worse. At Luckeeserai, however, we were enabled to make nearly 40 maunds of indigo, by the sale of which we hope, even with the present low price of indigo, to pay the actual cost of cultivation and manufacture, and the other expenses of the factory, with the exception of the manager's salary; but as our managing director in India acted as manager of the factory, drawing no additional stipend for so doing, we may say we have escaped that expense altogether. In fact, we could hardly have got a competent manager under £300 a year, whereas our managing director has only drawn £200, to which he was entitled in any case. The small expense for cultivation at the factory is due to our working there almost entirely on the Kooskee system, by which we have to pay nothing for the plant until it is delivered at the factory, except a small advance of a few rupees per bigah, which has to be given to the native growers at the commencement of the cultivation. We thus avoid a large expense on outlay, as it is called, which would, of course, all be a dead loss when visited by locusts or any adverse climatic occurrence, such as drought or flood.

"With regard to the indigo made at the factory, mostly by our new system of manufacture, by which the cost of chemicals is reduced to about one-fourth of their former cost, when we worked with ammonia alone (even though that cost had been previously greatly reduced by making the liquor ammonia at the factory), we are glad to state that, considering the damaged state of most of the plant (for the locusts left their sting behind even where they did not completely destroy), the indigo made was good indigo, and quite indistinguishable from that made by the ordinary system—a result we much wish to arrive at in order to avoid what the directors consider the most unfair valuation, namely, of the ammonia indigo, on account of a slightly different appearance from that of the ordinary made indigo; in fact, a slightly higher value. For this new, effective, and economical process, which has been duly patented by the company, we are indebted to the knowledge and exertions of our colleague, Mr. H. B Condy, who generously placed the patents at the company's disposal without any charge or remuneration whatever. Considering the very small cost of chemicals and the cheap cultivation and manufacture, we have no doubt that had we made the 200 maunds we fully and rightfully counted on this season, we should, even with that small factory, have not only paid all the costs of manufacture, but also the now much reduced costs of the company, and have still had a very good margin of clear profit. This we, of course, look for next season. With regard to the accounts, the directors have explained in the report the reasons for the increase in the debit balance of the profit and loss account. . . . The loss shewn is, in fact, entirely exceptional, and, in case of a

favourable decision of the legal proceedings, would, to a great extent, disappear. . . . We hope now that we have reached the bottom of all our difficulties, and that we may look for better results in the future. I now beg to move that the report and accounts be adopted, and I shall be glad to answer any questions."

Captain Hornby seconded the motion, which was carried after some discussion, and a vote of thanks to the chairman terminated the meeting.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

BOSTON, Dec. 24th.

THE COST OF PRODUCING COTTON.

The official returns for December, which give the prices received for cotton at the ginneries, are said to shew a loss to the planter. The average plantation price was 7·3 cents per pound. The department says that "for five years the range was from 8·1 to 8·6, and averaged nearly 8·4 cents. This decline is given in the records of exportation, which averaged in October a value of 8·9 cents, against 10·11 cents for October of last year, a decline of 12 per cent. The State averages are as follows:—Virginia, 7 cents; North Carolina, 7·4; South Carolina, 7·4; Georgia, 7·4; Florida, 7·3; Alabama, 7·3; Mississippi, 7·3; Louisiana, 7·3; Texas, 7; Arkansas, 7·3; Tennessee, 7·3. The department estimates that the plantation price, or that at the gin, has so far been 1·1 cents per pound less than the average price for the past ten years.

CHARGES OF UNDERVALUATION AGAINST BRADFORD FIRMS.

The continued imports of worsteds, notwithstanding the heavy tariff, mortify and mystify those who helped to frame the famous worsted clauses of the McKinley Bill. The champions of ultra-protection unhesitatingly say that Bradford houses are guilty of undervaluation. The confidence with which such assertions are put forward is amusing, and the anxiety of the prohibitionists—for they are little else—to have the matter "investigated" is equally calculated to create laughter, serious as the subject really is if these interested fanatics are to be allowed to have their own way. The Americans, we are told, have already suffered keenly from the invasion of their market by foreigners under a system of insufficient duties; "and the question is whether the clearly defined purpose of the Government of the United States to shape the law so that it would adequately protect the industry shall be defeated by foreigners who claim this great market as their own." There is a suggestion also made that English manufacturers, "made desperate" by the menace that they will lose this market, are enduring loss for a short time. It is proposed to stop even this by regarding as fraud the invoicing of fabrics at rates at, or actually below, the cost of production. This is a cool proposition; but in this country all things are possible.

FOREIGN TRADE RETURNS.

Some most important facts are revealed by the returns shewing the course of our foreign trade during the past ten months. The imports of articles free of duty for ten months of 1891 are valued at $355,752,561, against $235,280,849 in a like period of 1890, before the operation of the McKinley law (all except three weeks). The increase this year over last for the period specified is $120,471,712, or more than 50%. But it remains to be explained that the increase in imports of sugar alone (some grades were placed on the free list by the new tariff) amounts to fully $75,100,000. Other increases were—$20,000,000 on coffee importations, $1,500,000 on hides, $1,400,000 on chemicals, and $2,000,000 on raw silk. There were no decreased values of importations free of duty corresponding with any of the above.

The total values of importations of dutiable articles for ten months of 1891 compared with ten months of 1890 are given at $338,229,130 and $463,096,468 respectively, shewing a decrease of $124,867,338, or 27 per cent. In short, the decrease in value of dutiable imports for ten months of this year is a little more than enough to offset the gain in value of imports free of duty. Leading decreases in the value of classes of dutiable articles this year as compared with last were, in round numbers: on receipts of manufactured wool, $30,000,000; on iron and steel, except tinplates, $5,200,000; flax, jute and hemp, and manufactures, $15,500,000; on chemicals, drugs, and dyes, $2,200,000; on cotton manufactures, $6,200,000; on silk manufactures, $6,600,000. There is abundant material in the foregoing and in the accompanying table to provoke a renewal of tariff discussion. We reproduce the details of textile imports:—

IMPORTS, TEN MONTHS ENDING OCTOBER 31.

Articles	1891	1890
Free of Duty.	$	$
Chemicals, drugs and dyes, n.e.s.	26,081,573	24,605,954
Cotton, unmanufactured	2,701,070	1,245,374
Silk, unmanufactured	17,214,777	15,308,120
Textile grasses, etc.	16,541,207	1,634,657
Totals, free of duty (all kinds)	355,752,561	235,280,849
Dutiable.		
Chemicals, drugs and dyes, n.e.s.	11,870,812	14,010,269
Cotton, manufactures of	21,920,989	28,125,226
Flax, hemp, jute, etc.: Unmanufactured	2,136,744	14,320,720
Manufactures of	20,468,823	23,815,610
Silk, manufactures of	28,713,635	35,388,483
Wools: Unmanufactured	15,910,792	13,129,766
Manufactures of	29,480,705	49,568,054
Totals, dutiable (all kinds)	338,229,130	463,096,468
Total value imports of merchandise	693,981,691	698,377,317

EXPORTS, TEN MONTHS ENDING OCTOBER 31.

Articles	1891	1890
Chemicals, drugs and dyes	5,164,906	5,558,336
Cotton: Unmanufactured	185,142,093	165,455,710
Manufactures of	11,782,681	8,859,067
Flax, hemp, and jute manufactures	1,370,234	1,489,364
Total value exports domestic merch.	729,552,541	660,529,999
Total value exports foreign merch.	10 878,707	9,532,150

FALL RIVER.

With reference to the Fall River Mills, the following facts will interest your readers. They relate to the quarter which has just closed. The reports shew that twenty-four corporations, operating forty-one mills and representing a capital of $13,930,000, have paid in dividends during the past three months the sum of $240,550, or an average of 1·72 per cent. upon the investments of stockholders. For the preceding quarter, twenty-three mills paid an average of 1·75 per cent. On the other hand, twelve corporations, operating seventeen mills and representing a capital of $5,988,000, paid no dividends, some of them actually running behind and losing money*. In many instances, however, the missing of dividends is explained by the fact that the mills have been making extensive repairs or renewing machinery.

* These figures may with advantage be compared with those relating to Oldham, as given by us last week.—ED. *T. M.*

News in Brief.

ENGLAND.

Accrington.

The prizes gained by the students of Messrs. Howard and Bullough's Technical School, and also by the members of the Swimming Class and St. John's Ambulance Association, were presented in the assembly room of the new Conservative Club, on Monday evening of last week, by Mr. Thomas Aitkin, J.P., of Ramsbottom. There was a very large attendance. Mr. R. H. Rowland, J.P., presided, and amongst those on the platform were Messrs. Thos. Aitken, E. W. Horne, J.P., T. Bullough, R. Mitchell, W. B. Gray, B. Grimshaw, T. Gordon, W. Fisher, John Peters, H. Waddington, and several ladies.—The Chairman expressed his congratulations upon the success of the educational section of the works, a department which, he said, had the strongest support of the late Mr. Bullough, and he had reason to know that Mr. Bullough was not dissatisfied with the progress made during his lifetime. The school was made as efficient for its purposes as it well could be, but if there was any deficiency it had only to be mentioned and it would be remedied. It was always the aim of the late Mr. Bullough to get everything as near perfection as possible, and the school had been made as complete as it could be. He also congratulated the teachers and pupils upon the way they had performed their work.—Mr. Aitken, who was warmly received, said the technical school at Globe Works was second to none, if not the premier institution of the kind in the United Kingdom. The character of the school was far beyond what he had believed could be possible in Accrington; and the expense to the students was very trifling. The instruction given was such that after completing the course they were competent to fill all kinds of situations where a knowledge of machinery was required, but more particularly in cotton spinning. They were able to take the entire management of a spinning mill, with all its details. Mr. Aitken, in conclusion, paid a high tribute to the abilities of Mr. Mitchell, the principal of the Technical School. He briefly alluded to the loss sustained by the death of Mr. John Bullough, and said they were indebted to him for the proficiency of that institution. Mr. Aitken then distributed the prizes to the successful students.

Burnley.

The weaving industry still continues in a depressed condition. Whilst there is no general adoption of short time, there is much playing for warps. During the year there have been changes in tenancies of sheds, but little or no extension in the number of looms employed.

Blackburn.

Messrs. Harrison, Sons and Co., Highfield Mill, have placed an order with Messrs. Lord Bros., Todmorden, for bale breaker and mixing lattices.

The Blackburn and District Trades' Council have nominated Mr John Holt, secretary to the Twisters' and Drawers' Association, as a candidate in the forthcoming School Board election.

At the Blackburn Chamber of Commerce meeting on Monday, the Secretary (Mr. J. Watson) reported that he had received communications with respect to the new fibre, in which much interest was now being taken. It was being used with success at Manningham. Mr. Joshua Hacking remarked that the fibre was difficult to bleach, and that it broke when folded. Twenty years ago the same material was imported under the name of China straw. Correspondence was read regarding the Rating of Machinery Bill, after which the Chairman (Mr. Joshua Hacking) remarked that at present they were under what might be termed "the favoured nation clauses." Their mills were not rated, but in other districts in England they were, and all would have to be brought up and made uniform unless the bill were passed. He thought they ought to do all they could to get the bill made law. Messrs. Harrison, Appleby, and W. Taylor were appointed to attend the conference in Manchester on the subject of the Rating of Machinery Bill.

Bolton.

The whole of the mule spinners, and part of the ring spinners and cardroom hands in the employ of the Hindley Twist Co., left work on Christmas eve, after serving 14 days' notice, in consequence of the firm declining to remedy certain grievances which the hands allege to exist. Two out of the three mills are stopped.

Mr. Robert Halliwell, an ex-alderman of the borough, died on Sunday morning, aged 77. He commenced life as a piecer, and afterwards served an apprenticeship as a mechanic at Messrs. Dobson and Barlow's Works, and subsequently became manager of this firm, a position which he held for many years. In April, 1872, after nearly 40 years' connection there with the firm, Mr. Halliwell was presented by the employés with an illuminated address, and a gold watch and chain. He took an active interest in several public concerns, and was very highly respected.

Bradford.

Mr. James Drummond, the founder of the well-known firm of James Drummond and Sons, worsted spinners and manufacturers, died last week, aged 72.

The continued depression of trade in the weaving department at Messrs. Lister and Co.'s Manningham mills has now made itself felt in the spinning department, which has commenced running short time this week.

The new way of making plushes, velvets, and other pile fabrics, invented by Messrs Shott Brothers, Limited, Richmond-road, Bradford, is patented in France, Germany, Russia, and other places on the Continent, and is to be worked by a syndicate of Bradford gentlemen. The principle upon which the cloths are made admits of any weight of cloth or material that may be required, and the fabric will be made perfect in the loom without requiring any mending afterwards.

The second report of Messrs. J. Cawthra and Co., Limited, manufacturers, just issued, states that, notwithstanding the general depression of the Bradford trade during the period, the nett profits of the company for the year ended November 30th amount to £16,900 9s. 0½d., out of which interim dividends were paid on June 1st, absorbing £1,102 0s. 1d; and £2,908 14s. 5d. interest on the purchase money was paid to the vendor, and £4,000 was placed to the reserve fund. After payment of the 5% interest on the debentures for the past six months, £1,462 10s. 7d., the interest 6% on the preference shares, £1,754 19s. 9d., there remains a balance of £5,614 5s. 10d. for distribution, out of which sum the directors recommend that a dividend at the rate of 10% per annum be paid on the ordinary shares for the six months ended November 30th, making 10% for the year; that £2,000 be added to the reserve fund, making with the interest on the £4,000 before placed a total of £6,057 18s. 4d.; and that £689 5s. 10d. be carried forward to next account. The report points out that whereas the profits on the business as stated in the prospectus averaged for the previous five years £14,544, the profits of the first year's trading for the company amount to £16,900.

Batley.

On Wednesday a meeting of the Chamber of Commerce was held, under the presidency of Mr. W. Bagshaw, at which a letter was read from the Foreign Office stating that Her Majesty's Minister at Belgrade reports that the increasing prosperity of Servia is bringing with it a marked endeavour on the part of foreign countries to push their trade in Servia, and that the interests of British trade are being materially assisted by Mr. G. Fuller, who has opened an agency at Belgrade, and has already obtained orders for goods from England, which for their superior quality will be able to supplant those spurious imitations, numbers of which have been sent to Servia from Continental manufacturing centres.

Bury.

The members of the Bury Spinners' Association have decided that the levy of 3d. per week per member in aid of the funds of the Amalgamated Association of Spinners shall be payable on and after Monday, January 4th, 1892. This will bring the payments of the spinners to the funds up to 1s 3d. per week. During the past month there have been 68 members on the funds, the expenditure being £80 16s. 11d., leaving a gain on the month of £25.

On Saturday last the Daisyfield Mills, Elton, Bury, were closed for a week in consequence of the change which is contemplated in the conduct of the firm. Considerable progress has been made with the arrangements for floating the concern—which was till lately run by Messrs. W. and J. Hutchinson, Limited—and it is regarded now as certain that the company will take over the whole of the mills and effects. It is expected that work will be resumed on Monday morning next.

Church.

The annual ball in connection with the works of Messrs. F. Steiner and Co. (Turkey red dyers and printers) was held last night. This popular event is confined exclusively to the employés and their wives, and is largely patronised by the principals of the various branch works and offices.

Much sorrow has been felt here for the two mill operatives, Frances Badds and John Shorrocks, both of Great Harwood, who came to an untimely death on Christmas Eve by drowning in the canal at the turnbridge. The two, who were engaged to be married, set off from Great Harwood across the fields to Accrington to make some purchases, and it is presumed they walked into the canal, owing to the dense fog.

Dewsbury.

On Monday night a fire occurred in the works of Mr. Thomas Crawshaw, a well-known manufacturer of shuttles for looms. Damage was done to the amount at least of £500 or £600.

Farnworth.

Mr. William Fielding, who has retired from the management of the Bentinck-street Mill Co., and taken a mill at Unsworth to commence business on his own account, has been presented by the employés of the former mill with a silver tea and coffee service, cruet, and tray. A younger brother of Mr. Fielding has succeeded to the management.

Messrs. T. Nuttall and Sons, of Oak Mills, Longcauseway, Farnworth, are in negotiation for the purchase of Lakefield Mills, Worsley-road, Farnworth, which some years ago were worked by Messrs. Samuel Hurst and Co., and have recently been in Chancery. The old machinery in both spinning and weaving departments was recently sold by auction, and it is Messrs. Nuttall's intention to remove a number of their looms into the weaving shed and commence working there at once, so as to give more accommodation in Oak Mills. The rest of the mill will be put in repair, but it is not intended to work it at present.

Great Harwood.

Messrs. Lord Bros., Todmorden, are putting in one of their bale breakers and mixing lattices for Messrs. W. and I. Thompson, Bank Mill.

Halifax.

The strike of dyers at Messrs. Fletcher Bros.' Raglan-street dyeworks has terminated, the men returning to work on Monday morning. The arbitrators (Messrs. T. S. Scarborough and J. H. Beever) met on Saturday, and agreed on a basis for settlement, the terms of which have not been disclosed. It has also been decided that in future either party shall give three months' notice of any change demanded.

Heywood.

A tremendous sensation has been caused throughout the Heywood district by the reported loss of £4,000 on the half year's working of the New York Mill Co., Ltd., Broadfield, Heywood. For some reason or other this mill has not been near as successful as its compeer, the Mutual Spinning Mill Co., Aspinall-street. Losses have been experienced before, but the latest report has thrown quite a damper on this class of investment in the town.

Huddersfield.

Damage to the amount of between £6,000 and £7,000 was done by fire at Providence Mills, Marsh, Huddersfield, on Wednesday. The mills are run by Messrs. Crosland and Pontefract, worsted spinners and combers. While the Chief Constable (Mr. Ward) and a fireman named Horner were in the building the roof gave way. Mr. Ward was at once rescued from his perilous position, but Horner was imprisoned for a considerable time under some heavy machinery, and on his release had to be conveyed to the Infirmary.

Keighley.

A fire broke out on Saturday night at the extensive premises of Messrs. Prince Smith and Son. The damage, which is fully covered, is estimated at £400.

Mr. Prince Smith, jun., and Mr. Smith Ambler (of the firm of Messrs. Prince Smith and Son, machine makers), are on a business visit to the United States.

News has been received of the death, which occurred in November last, on the Pungwe river, of Mr. Edgar Spencer Marriner, fourth son of Mr. Lister Marriner, J.P., of Greengate, Keighley. Prior to his departure for South Africa, Mr. Marriner, who was 25 years of age, had been engaged in the business of Messrs. Marriner, Son, and Naylor, Greengate Mills. He left Keighley in February last with the intention of visiting Mashonaland, his expedition being in the combined pursuit of business and pleasure.

Leeds.

A strange affair has occurred at Messrs. Hargreaves and Nussey's Low Mill, at Farnley. The works, which are on the Whitehall-road, about a mile beyond Farnley Station, on the London and North-Western Railway, comprised a comparatively new building and one of three storeys in height of some age, in which the business was originally carried on. At about five o'clock on Sunday morning the watchman was aroused by a crash, and found that the old mill had collapsed. There were several willeying machines in the building, and they have suffered some considerable damage by the fall of rubbish, but the accident will not cause any stoppage to the mill, where several hundred hands are employed, as the firm will "give out" that portion of the work of woollen manufacturing to other firms in the same trade.

Manchester.

Mr. Arthur E. Dyson, of the Hollies, Timperley, and member of a well-known firm of Manchester merchants, died at his residence, on Monday, from inflammation of the lungs. He was the son of Mr. A. K. Dyson, County Councillor for Sale Division, and was about 35 years of age. He was a strong supporter of the Unionist cause, and was highly respected in the district.

The death occurred on Sunday of Mr. John Henry Agnew, of Drywood Hall, Worsley. Mr. Agnew began business as a cloth agent about the year 1856; he was for some time a member of the firm of Ormerod, Standring, and Agnew, and afterwards founded that of Messrs. J. H. Agnew and Brother. Mr. Agnew was chairman for many years of the Lancashire and Cheshire Telephone Company. He was a generous supporter of local charities, and took a very active interest in the Pendlebury Hospital for Sick Children. He married a daughter of the late Mr. John Standring, and leaves two sons and two daughters.

The following circular letter has been issued by Messrs. T. Goodbehere and F. B. Dodd, as executors of the late Mr. Samuel Brooks, cotton machinist, of Union Ironworks, West Gorton:—"Dear Sir,—Our duties as executors of the late Samuel Brooks having now terminated, we beg to intimate to you the arrangements made for the future carrying on of the business. Mr. Samuel Herbert Brooks, with whom, since the death of his father, in 1886, we have acted, now takes into partnership with him his brother-in-law, Mr. Richard Alexander Doxey, who together will continue the business, as and from the 1st January, 1892, under the style of 'Brooks and Doxey.' All accounts due to and owing by the late firm will be received and paid by Messrs. Brooks and Doxey. Mr. Doxey, as will be generally known, was for many years closely associated in the business with the late Mr. Brooks, and since his death has been actively concerned in the management. There is no change other than the above-named, the whole of the management and staff being retained as hitherto. We take the opportunity of thanking you for the business support given to the firm during our executorship, and solicit the continuance of such support for the firm under its new style.—Yours obediently (signed), T. GOODBEHERE, F. B. DODD, Exors. of the late Samuel Brooks."

Accompanying the above circular letter is one from Messrs. Brooks and Doxey, in which, after referring to the change therein set forth, they say, "Every effort will be made in the future to conduct the business as efficiently as hitherto. . . . Both works [the Union Ironworks, West Gorton, and Junction Ironworks, Newton Heath] are well equipped with a large and most modern plant, and we are exceptionally well laid out for the execution of all orders for carding engines, preparing, spinning, winding, reeling, bundling, etc., machinery."

Oldham.

It is reported that the cotton coming to hand is rather deficient in staple, although it is moderately clean and of fairly good colour.

It is reported that there are large supplies of cotton at the railway stations at Royton and Shaw, some of which is said to have been purchased when the raw material was at a high figure. It is even said that some of the companies are using a lot of cheap cotton with the "dear."

Mr. John Moorhouse, who has accepted the appointment of carder at the Swineshaw Twist Co., Millbottom, has been the recipient of a token of respect from the cardroom operatives employed at the Clough Mills, Shaw, where he was engaged as under-carder.

The number of cotton mill fires which have occurred in this district during the past year whereby the services of the Corporation fire brigade have been called into requisition is 20, the estimated amount of damage being £30,000, against the preceding year of 29 fires and £27,000 damages.

On Christmas Day morning, Mr. S. R. Platt (head of the firm of Messrs. Platt Bros. and Co., textile machine makers, Oldham) distributed 500 hot-pots to poor people. Each dish contained 2½ lb. of meat and a slightly larger weight of potatoes, while each recipient was also presented with a 2 lb. loaf and a Christmas card. On the previous evening 500 poor children were entertained in the Town Hall by the Mayoress, wife of Mr. Alfred Emmott, J.P., of the firm of Messrs. T. Emmott and Sons, Ltd., spinners and manufacturers.

Pendlebury.

The Pendlebury Spinning Co., Limited, are replacing their entire preparation machinery, and have awarded the orders for openers, scutchers, drawing, and speed frames to Messrs. Lord Bros., Todmorden. Messrs. Dobson and Barlow, Bolton, supply the cards.

Prestwich.

On Saturday Mr. W. Mather, M.P., formally opened an industrial and art exhibition, which is being held in the National Schools.

Rossendale.

The death of the Duke of Devonshire, having promoted the Marquis of Hartington to the House of Lords, has thus caused a vacancy in the Rossendale division. The Gladstonian Liberal candidate, who has been before the constituency for some time, is Mr. J. H. Maden, of Bacup, a son of the late Mr. Henry Maden who built up a very extensive cotton spinning business in the neighbourhood of Bacup, and recently died immensely wealthy. The Conservatives and Liberal Unionists have adopted as their candidate Sir Thos. Brooks, Bart., of Crawshaw Hall, a cousin of Sir Wm. Cunliffe Brooks, M.P., the well-known banker—both grandsons of Wm. Brooks, of Whalley, who, in that village, laid the foundation of the banking business. One of his sons, Samuel, in conjunction with Mr. Roger Cunliffe, of Great Harwood, founded the Old Bank, Blackburn; and the other, John, the father of the present Sir Thomas Brooks, founded the calico printing firm so widely known up to a few years ago as Butterworth and Brooks, Sunnyside Printworks, Crawshawbooth, which was managed under the supervision of the present candidate until seven years ago.

Stockport.

So busy are most of the mills of the town that the barest possible holidays are allowed this Christmas and New Year. With cotton so low this should indicate a prosperous time, and no doubt when the dividends are declared by the limiteds, this will prove to be the case.

Since one of the prominent schools of the town applied to the Education Department for permission to close the school doors against half-timers, much discussion with regard to the matter has taken place. It is obviously more convenient for a school to have only whole-day scholars, and where a school is so successfully managed that a complement of pupils is always at hand, the managers no doubt consider themselves justified in resenting the intrusion of half-timers But, on the other hand, there is the case of the poor children having to go to the wall. The School Attendance Committee has forwarded a formal objection to the Education Department, and the reply is being awaited with much interest.

Tyldesley.

Messrs. Caleb Wright and Co., of Tyldesley, are having their mills fitted with sprinklers, and also with fire escapes.

Yeadon.

A destructive fire broke out at the Moorfield Cloth Mill, Yeadon, on Sunday. One portion of the building was soon enveloped in flames, and, despite the efforts of three brigades, the building was almost burnt out, the damage being estimated at £12,000, in addition to which several hundred hands will be thrown out of employment. The engineman was so severely injured that his life is despaired of.

The monthly meeting of the Yeadon, Guiseley, and District Chamber of Commerce was held on Monday. Mr. Jonathan Peate (chairman) presiding. A letter was read from Sir H. T. Wood, the Secretary of the British Commission for the Chicago Exhibition, stating that he had written to the Executive at Chicago asking whether English manufacturers would be allowed to label their goods distinctly with the price at which they can be sold in America with and without Custom duties, and he enclosed a copy of the reply, which was to the effect that there could be no objection to a request so reasonable.—The Chairman said he had spoken to several manufacturers of the district relative to having a collective exhibition of their goods at the Chicago Exhibition, and he found that the feeling was that the tariffs imposed by America were so high that no good could be done by exhibiting their goods.—A member expressed the opinion that probably those manufacturers did not know that they would be allowed to give comparative prices, and it was therefore decided to circulate the reply from Chicago among the manufacturers of the district.—Mr. Alf. Brayshaw was appointed a member of the Board of Conciliation in the place of Mr. Thomas Brown deceased.

SCOTLAND.

Edinburgh.

Mr Hugh Rose, senior partner of the firm of Craig, Rose and Co., general merchants and manufacturers, Leith Walk, died at his residence, 3, Hillside Crescent, yesterday week, from the effects of influenza.

Glasgow.

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

India, China.	U.S. & Canada.	W. Indies and S. America	Africa.	Continent.	Totals.	Totals previous week.
£54,308	16,125	3,450	—	1,345	75,228	93,872
128	15,387	—	—	—	15,515	23,726

Hawick.

The South of Scotland Chamber of Commerce continues to agitate against the North British Railway charging disproportionate rates. That the carriage of coal from Benhar to Hawick, a distance of 81 miles, should cost 1s. 6d. per ton more than to Carlisle, a distance of 120 miles, is certainly anomalous, and the policy of treating monopolised districts in this way, both in regard to rates and fares, is as short-sighted as it is unfair.

Vale of Leven.

Trade in this district at present is fairly good. There has been some difficulty, however, in the printworks in getting orders out of hand on account of the scarcity of grey cloth.

IRELAND.

Ballynahinch, Co. Down.

The Ballynahinch flax market has been a great success; the yield of flax is better this year than last, and the price considerably higher.

The Standard Manufacturing Co., Limited, has opened a branch factory here for the making-up of pinafores and shirts. Something of this kind was very much needed, as two of the three hem-stitching factories were recently closed. The machines in use are those of the Singer Manufacturing Co.

Belfast.

There is great depression in the sewed muslin and hand-embroidery trades, owing to the large quantities of Swiss embroidery sent into this market.

Mr. Charles Connor, of Fenton, Connor and Co., etc., of the White Linen Hall, gives up, with the year, the official position of Mayor of Belfast. This terminates his third year in succession as Mayor. Mr. Connor for some time has been before the electors of North Antrim, in view of the General Election that cannot be far off, as the successor of Sir Charles Lewis, Bart., M.P., their present representative.

There is nothing new to give in connection with the linen lappers' strike. All the newspapers have advertisements for hands not belonging to the Union; this is on behalf of the employers. On the other side advertisements appear calling on lappers to stay away from Belfast during the strike, and also appealing to parents and guardians not to put their young people to the trade. The different Trades' Unions are also publishing motions of sympathy and support with the lappers. All forms of workers, females included, have now their Unions and Societies in this city.

Technical education in some form or other is being constantly brought under our notice. A few weeks ago the Town Council agreed upon a sum of £700 to be distributed among the various schools. Sir James Haslett thought that the sum would do all that was wanted until the ratepayers would have an opportunity of decisively indicating their opinion in the next municipal election. A few days ago a deputation interested in the Technical School waited upon one of the sub-committees in the Town Hall, asking that £400 of the £700 already referred to should go to them. The chairman did not commit himself in any way as to the deputation Might it not be asked here why do not the large firms club together in subscribing a proper amount to equip schools for the necessary instruction? £2,000 or £3,000 spent thus would do good, and all would be gainers. It is not likely any money raised out of the rates will do much more than keep such schools in going order.

The following letter has been addressed by the York-street Flax Spinning Co, Limited, to the *Manchester Guardian*, and published in the latter paper: "Dear sir,—In the notice of the Manchester and Salford Trades' Council meeting, given in your issue of 18th inst., a delegate of the Belfast linenlappers is reported to have said: 'At present many of the men are unable to earn more than eighteen, twenty, or twenty-five shillings a week, and on this they have to bring up large families.' As this statement tends to create an incorrect impression, we beg leave to place before your readers the following facts: Our firm is one of three whose men have been 'brought out,' as your report says. Forty-five men left our employment on strike on the 12th inst. Of these four were receiving 20s. per week, two 22s., six 25s., fourteen 26s. to 28s., twelve 30s, three 32s., and four 34s. per week. Those at 20s and 22s. were young men not long out of their apprenticeship. Overtime was paid at time and a half—that is, a man received pay for an hour and a half for each hour of overtime worked. In addition to the above wages, a considerable number have received annual bonuses of £2 to £5 and a week's holiday on full pay, besides other advantages. We are inclined to believe that, judging by the permission which has been received from a large number of our customers since the strike began to send forward their goods either unlapped or more simply made up than formerly, if the strike be prolonged the men may find they have 'killed the goose that laid the golden egg' by decreasing the demand for the labour of skilled lappers. We do not believe that the United Trades' Council will consider the demands of the Belfast lappers reasonable when made aware of the following facts: The hours the men ask for are 48 per week. At present the hours they work vary in different houses from 48 to 54. It will be seen that 54 is the maximum in a trade in which the work is exceptionally light and easy, and conducted under the most favourable conditions as to air, light, and shelter, whilst in all other trades the hours vary from 54 to 56½, and in many of these the work has to be performed either subject to exposure to the weather, as in the case of bricklayers, or in heated or dusty rooms, as in the case of operatives in flax spinning mills."

Dromara.

The sail-cloth weaving factory in Dromara is doing good work, and is very much appreciated in the village. Report says Mr. Chapman is about to extend his business considerably.

Dublin.

Miss Prendergast, directress of needlework under the Commissioners of National Education, in her report in the Blue Book lately issued, is pleased to state that a decided improvement in industrial subjects has taken place during the past year. Her remarks refer chiefly to the plainer varieties of work. Efforts, with some success, have been made to introduce weaving into the convent schools in Skibbereen, and Queenstown, County Cork, and lace making into the Convent of New Ross, County Wexford.

Newtownards.

Mr. William Grant, of Movilla-street and George's-street, Newtownards, has purchased the old bleach-green works on the Donaghadee Road, with the view of converting them into a power-loom weaving factory.

Miscellaneous.

TEXTILES IN NEW ENGLAND.

Probably no better opportunity could be found for following out the textile history of a people than in the case of the New England states. There are none of the mists of antiquity to hide early effort or tempt empty conjecture. There are no traditions as to the invention of spinning or weaving, such as figure in the legends or mythology of almost every nation of early civilisation, to be dealt with, and there can be no speculation as to the wonders of the first of all manufactured fabrics, such as some writers have loved to linger over, for comparison or imagination to run riot in. To some extent it is a matter-of-fact story. It was usual, in the infancy of our literature, for any branch of history to be commenced with the Deluge, sometimes—for the sake of absolute completeness—with the Creation, and any notable pedigree was tolerably certain to make a start with Adam and Eve. But here there was practically no past to be considered, and only a few savages, with their nakedness extenuated by sealskins about their loins, appeared to fill up the gap between the landing of the Pilgrim Fathers and the beginning of Time. It would seem as if there was nothing but a bald, unromantic tale to be told, and yet what could be more engrossing or full of interest than this bold undertaking by a handful of earnest men and women, making a home for themselves in a new world?—what more stirring than their subsequent success, as they made for themselves a way out of industrial destitution to commercial affluence? They were, as they described themselves when seeking permission to settle in the unfriendly land, "industrious and frugal as any company of people in the world;" they were endowed, as we know, with skill and courage, but with little else besides, and Robinson Crusoe himself was hardly in as sorry a plight as these emigrants when they landed

On the wild New England shore,

and yet they founded a nation. Happily the materials for writing a full, true, and particular account of their difficulties and advancement are still available. Their strong, if not headstrong, character, and their emphatic belief in the possibility of regulating the life of the community in almost every particular, ensured official recognition, and often official record of the occupations and products with which they supplied their widening wants; and, so far as textile affairs are concerned, their progress from poverty to independence in manufactures can be followed at every step. Family papers, old accounts, and, later on, newspapers and other publications, fill in with abundant details the broad outlines of town records and colonial statutes, and complete the account of a remarkable period. Old and New England had alike an interest in these events, and the effect of them was felt on both sides of the Atlantic. A finer subject, more happily circumstanced in its limitations of area and time, could hardly have been open to a fortunate pen, and Mr. W. B. Weeden, who has lately dealt with it as an important part of his "Economic and Social History of New England," is to be congratulated as well for the selection as for his treatment of it.

For a while, at least, the settlers imported such clothing as they required. The women were skilled in the textile arts far beyond the rudimentary knowledge of distaff and spindle; they were expert enough in embroidery and needlework, and acquainted with the mysteries of lacemaking and dyeing, which they had learnt in Holland; but for a long time there was enough

for all to do in setting up their houses and getting them in order, without thinking of fibres and fabrics, still less of trade and profit. The harvest of the seas afforded them food, and, in later days, good business, but the first movement towards money-making was in barter with the Indians for furs. This brought, as may be readily believed, returns which might have made Shylock envious. Since seventeenth-century cloths had not the enduring qualities of the garments of the Israelites during their desert wanderings, personal necessities rather than traffic requirements appear in the first glimpse afforded of the goods in demand for the Colonial markets. These were "good black broadcloth at 12s. or 15s.; scythes, sickles, and knives; Irish stockings and some Jarsey," which, being interpreted, means combed wool, "fine Holland, cambric, and lawn; lead buttons, silk, tape, and other Manchester ware." But there is a reference soon after to "trading cloth," which would appear to denote an Indian quality imported. If not, the term requires explanation. Mention of home-made cloth does not occur for some years, when four yards appear in an inventory, and are valued at 6s., but it is then accompanied by an entry of "two spinning wheels," in evidence of domestic diligence. This was hardly a virtue when we find constables ordered in 1675 "to inspect families, and to present any which spent their time in idleness." We may take it for granted that there would have been no first-class misdemeanants or imprisonment without hard labour in those days. Indeed, there is in 1661 a payment of £10 for "wheele cards and cotton woole to Imploy the Indian weemen att the vinyards," and when Salem, in 1725, had a loose woman in charge, the old English precedent, which established at Cambridge the Spinning House which has lately caused so much discussion, was at once observed, for the town provided a spinning wheel, a pair of cards, and some wool, that "she may be employed." Sometimes the towns went farther than this in the work of reform, and in 1720 a Boston committee recommended "the procuring a house and the hiring of a weaver whose wife should instruct children in spinning flax." Though this might be taken as an early instance of technical education, the methods adopted in carrying it out can hardly be recommended for imitation. The children were to be furnished by the overseer of the poor, and the town was to pay their subsistence for three months. After that the master was to allow them their earnings. The town was to provide twenty spinning wheels, and offered a premium of £5 for the first piece of linen spun and woven in the town, if worth 4s. a yard. The proposition was changed the next year into an offer of £300 to be loaned without interest to anyone undertaking the school. At first "good security" for the loan was required, then "personal security" was declared sufficient, and although Mr. Weeden does not set forth the sequel, it is not difficult to guess that the effort came to grief. There was another time when industrial tuition was given on a more extensive scale, and with a more specific motive. Cromwell, whose commercial policy is seldom done justice to, had made a treaty with the French in 1655, which gave a better outlet to English goods.

"Trade was active enough to allow the English Government in 1660 to lay an export duty of 3s. 4d. on a piece of 28 yards of woollen broadcloth, as well as on other commodities. The export of sheep, of wool and woollen yarns, was prohibited. This whole movement of the European market was felt in the colonies. The Massachusetts General Court in 1656 'fearing that it will not be so easy to import clothes as it was in past years, thereby necessitating more home manufacture,' orders the select men in every town to turn the women, boys, and girls toward spinning and weaving. The officials are to consider each family, and to assess it for one or more spinners, or for a fractional part. 'That every one thus assessed do after this present year, 1656, spin for 30 weeks every yeare, a pound per weeke of lining cotton or wooling and so proportionably for halfe or quarter; spinners under the penalty of 12d. for every pound short.' The commons are to be cleared for sheep, rams are to be inspected, hemp and flax seeds are to be saved and to be sown. This was a deliberate and positive step in economic production, and a further extension of that minute patriarchal government which we have seen in so many forms. Classes of five, six, or ten were arranged under class leaders."

Although Mr. Weeden again baulks our curiosity as to the course and end of this movement, except that hemp enough was cultivated to employ a mill, we may feel sure that it was not on such artificial lines as these that the industrial salvation of Massachusetts was worked out. There are indications of trade and prosperity of far greater assurance than spinning assessments by select men. The ocean highway was continually crossed by ships, the flocks of sheep increased so as to make the colonists independent of English supplies of raw material. There was almost a boom in emigration. The calendar of State Papers contains a letter sent in 1638 by Lord Maynard to Archbishop Land, announcing "the intention of divers clothiers of great trading to go suddenly into New England; hears daily of incredible numbers of persons of very good abilities who have sold their lands to depart." It is so seldom that any trace is to be found of a depletion of English labour that it is interesting to notice that there seems to have been a steady flow of experienced workmen to the land of promise across the seas. Although it is thought that the tide of emigration ebbed as well as flowed, so that, over a long period, there was no great loss or gain on either side, yet we are told that clothiers, that is those who made cloths, "came as they were wanted." In the eighteenth century the Lords Commissioners of Trade and Plantations reported that the linen trade was "dayly increased by the great resort of people from Ireland thither, who are well skilled in that business," and one instance is given, in 1719, of the transport of about 100 Irish families from Londonderry, who settled on the left bank of the Merrimac, a few miles below Manchester, New Haven. Whatever may have been the ultimate balance in population on the traffic to and fro, this supply of skilled labour must have been of the utmost value to the young colonists.

For lack of ready money and regular currency, and by stress of interrupted trade on that account, home manufactures were set up. In 1641 there was such a stagnation in business with English markets, that the people were fairly compelled, according to a contemporary account, "to sow hemp and flax (which prospered very well) and to look out to the West Indies for a trade in cotton." Another record states that "they are setting on the manufacture of linen and cotton cloth and the fishing trade." There was a significant show of vigilance and enterprise by the authorities in this emergency. Massachusetts tried the bounty system, and ordered, too, that enquiry should be made as to what seeds were necessary for the growth of flax, and search instituted for persons who had knowledge of processes of manufacture, while boys and girls were to be taught to spin yarn. Connecticut sent off a vessel to the West Indies for cotton wool, under an official order to the effect that

Whereas yt is thought necessary for the comfortable support of these plantations, that a trade of cotten wooll be sett vppon and attempted, for the furthering whereof yt hath pleased the Gouernor that now is, to vndertake the furnishing and setting forth a vessell, with convenient speed, to those parts where the said comodity is to be had yf yt prove phesable; In consideration whereof, as also from the consideration in the former order specified, It is ordered by the Authority aforesaid, that vppon the Returne of the said vessell, the Plantations by proportion shall take off the said cotten, at such valuable consideration as yt may be afforded, according as charge shall arise and accrue thereupon; the pay for the said cotten wooll to be made in Englishe Coine or Pypestaves as the country shall afford: The proportions to be divided and laid vppon the severall Townes according to the division of the last Country Rate.

The conditions of this venture enable us to understand why, at a later date, when one Mr. Hopkins had brought a good cargo of cotton safe to port, several towns were directed to take specified quantities of it from him. Considerable success appears to have attended these voyages, although the sand and stones, and other foreign substances up to revolvers, sometimes found in cotton bales in our day, had an early precedent, for when John Hull, in 1672, bought two bags of "vine cotton woole," and traded them into the country for provisions, the customer found "much fowle cotton" in the middle of one bag, and Hull had to make amends. But good, bad, or indifferent, there was often a serious scarcity of the raw material, and then attention was turned to indigenous fibres. When cotton did not come in fast enough from the West Indies into Connecticut, in 1640, the Court recommended the gathering of "wild hemp," stating that 2d. per pound had already been offered for it by sundry persons, and enjoining the people to work their children and servants early and late in collecting it. This unidentified grass, which had long been used by the Indians in ropes and mats, excited great expectations among the colonists, and some were sanguine enough to think that it was superior to English hemp, which was regularly imported. This search for new fibres, which is yet far from being finished, began very early.

There have also been times when unusual materials have been tried through stern necessity. One Madame de Repentigny, in the younger days of the Dominion of Canada, gained great credit for having made some kind of a blanket from linden bark and nettle stems, but the lady was only following well-established usage in both cases. The enduring patience of our forefathers in hackling—we can hardly tell how—the stems of hedgerow nettles, and in spinning cow's hair and rabbit fur, must have been beyond praise. But it was rather by way of discovery that the Connecticut authorities were inclined to regard their wild hemp, and in this light it is remarkable to find that "silk grass" was advertised in a Boston newspaper of 1720, while an English tract of 1650, which sets forth the natural advantages of Virginia, included among them "Silk grasse to be used for Cordage," valued at 6d. the pound. This evidently was not the fibre of the Bromelia or wild pine-apple, to which the name of silk grass is still given, for that of the colonies is described as a grass, and tradition asserts that "Queen Elizabeth had a gown made of this material, described as a substantial and rich peace of Grograine." It was hoped that by cultivation the fibre of this plant could be improved so as to equal the silk which it was considered to resemble.

WOOL GROWING IN ALEPPO.

Sheep are reared in very considerable numbers in the vilayet of Aleppo, and the district of Aleppo, or, more properly speaking, the mutessarrifiates of Orfa and Deir-el-Zor, are the localities where the raising of sheep and growing of wool acquire the greatest importance. In the colder districts of Marash, Aintab, Antioch, Kellis, Harem, Djesser-el-Shogr, Idlep, etc., sheep are kept in caves during the winter, and are fed on a mixture of hay and straw. The number of sheep which usually compose a flock varies greatly. Each family forms out of the sheep they possess one or more flocks, watched over by members of the family. Eighty to a hundred sheep are generally confided to one person. The United States Consul at Beyrout says that the total number of sheep which graze in the vilayet of Aleppo is estimated by the provincial authorities at 2,500,000 in round numbers, divided amongst various tribes. All the sheep raised by these tribes belong to the breed called *Awas*, originally from Bagdad, which, in crossing with other races, have lost the original fineness, but gained in the length of their wool. The best wools, as regards fineness, are those coming from sheep raised by the tribes called El-Tayawi and El-Neim, who take greater care of their flocks, and give them, two months after the shearing, and several weeks apart, two or three sulphur baths, and also administer to them small doses of sulphur internally. By this treatment the sheep appear to enjoy immunity from the skin diseases which influence the beauty of the wool. Next to the wool grown by these two tribes, which is limited in quantity, comes that of the Hadidi. The process of shearing in Aleppo is of the simplest order. The sheep is laid on the

ground and is shorn with common shears. This takes place from the end of April to the end of May. Each fleece is rolled up separately, and is sold to the tradesmen from Aleppo, Orfa, and other localities of minor importance, who visit the encampments of the Arabs on the outskirts of the desert, where the bargains are made. The fleeces are not sold by weight, but by the piece. Wool thus bought is transported to the various inland cities on camel back, and then sold to merchants and exporters. It is these latter who occupy themselves with the cleaning of the wool and with its packing in bales by hand presses. The washing of the wool is also performed by the exporter. After removing the dirt, each fleece is washed separately in a current of water. After washing, the fleeces are spread out on the grass or on stony ground and exposed to the sun. The wool from the Aleppo vilayet is mostly exported, either washed or unwashed, to the United States and to Europe, a large portion going to Marseilles. The wool from slaughtered sheep is spun by hand on common spindles, and is made into *abas*, a sort of coarse, thick woollen cloak with a hood. The manufacture of these *abas*, which are used to a considerable extent in the neighbourhood, is of the most primitive kind—on the old hand-looms, without the employment of any mechanical contrivances. Wool is also to some extent made into carpets in this province.

The wools grown in the vilayet of Aleppo are divided into seven principal classes—(1) the wool called *Hadidi*, which embraces not only the wool grown on sheep raised by this tribe, but comprises also all that produced by other tribes; (2) the wool called *Anezi*; (3) *Deir-el-Zor*; (4) *Fellahi*. These four categories are sold in the city of Aleppo, and three of them are known in Marseilles under the name of "unwashed Persian wool," the fourth, or *Fellahi*, being designated as "red Persian unwashed." When washed, they are known under the commercial name of "Aleppo washed wools." Classes 5, 6, and 7 are called respectively *Arabi*, *Barazi*, *Milli*. The latter is by far the coarsest of these seven categories, while *Arabi* is superior even to *Hadidi*, and is known in the Marseilles market under the denomination of "unwashed Orfa." All these grades are usually to be found warehoused in the city of Orfa. Besides the varieties enumerated, wools coming from the Mardin district are also sold in the markets of Aleppo. They comprise three qualities, viz., the *Awas*, the *Caracash*, and the *Kurdes*. The first of these three is generally washed on the sheep's back by forcing the sheep to pass once or oftener through a stream of water. The *Caracash* wool is also washed by the same process, only less thoroughly. A very small percentage of the Aleppo wools is used in the making of *abas* and carpets, and for the filling of mattresses, etc. The quantity of wool annually exported is estimated at nearly 5,000,000 lb.

SOCIAL GATHERINGS.

MESSRS. JOHN HETHERINGTON AND SONS, LTD., MANCHESTER.

On Saturday afternoon, the fourth annual gathering of the principal employés of Messrs. John Hetherington and Sons, Limited, of the Vulcan Works, Pollard-street, Manchester, took place at the Crown Hotel, Booth-street. Mr. J. NASMITH was in the chair, and amongst those present were Messrs. J. Jackson, Ross, Rae, B. Seel, V. Buckley, J. Hurst, Joynson, Wade, Mortimer, Moore, T. Oakes, Bailey, Mallileau, T. Hague, Philips, and all the principal foremen.—The usual loyal and patriotic toasts having been duly honoured, the Chairman addressed the company. He was, he said, extremely pleased to be at that table with them once more. (Hear, hear.) Looking back at what they thought and said last year he did not think now that they were meeting again that they had reason to feel any shade of disappointment. They had, indeed, rather gone beyond what they might fairly have expected last year; in fact, they had made the best year's progress that had ever been made since the firm had been converted into a company. (Applause.) One remark he made last year was that a company wanted more assistance in the way of ideas and suggestions from the heads of departments than a private firm, and in Mr. John Hetherington they had a remarkable man, a man of large parts and of good education, a born mechanic, and the son of a natural mechanic. For those reasons he took upon himself the whole weight and burden of the place. He (the chairman) felt sure that with the united efforts of the gentlemen around that table, all working harmoniously together, they were bound to succeed; where everybody was doing their best there could not possibly be failure. Notwithstanding the amount of work they had already in preparation, they were always nibbling away at something new, and starting out in fresh directions. In many departments there were already changes going on that must tell favourably for them, and he had the most sanguine expectation of the future. He had hoped to have had with them Mr. M'Queen and Mr. Howarth, but both gentlemen were too unwell to be present. Mr. Howarth had, however, written the following letter:—

Vulcan Works, Pollard-street, Manchester,
Dec. 26th, 1891.

"To the Chairman of Messrs. John Hetherington and Sons' (Limited) Annual Dinner.—Mr. Chairman and Gentlemen,—I am very sorry that my present state of health will not allow me to join you at the annual gathering to-night, but I trust you will have a pleasant and enjoyable evening, with all the good things that Christmas brings. I think we may fairly congratulate ourselves on having had a very successful year. We have had the largest output in any one year, and have continued to lead by making the best machines, in proof of which I heard the other day of a large order being placed with an opposition firm on condition they altered the machines like Hetherington's. This is not the first case. I also hear of a certain firm who are about to make a new mule to embrace Hetherington's strong points, and by so doing would be able to drive 2,000 spindles with one headstock. We have done good work during the year in the Oldham district, having something like 20 customers on our books, and I trust the men will use every effort to make a thorough good job of any machine they have to set up, and never leave a machine until they are satisfied that it cannot be improved. Speaking of the future, we have a good prospect, and have some 500,000 mules and ring spindles on order, together with all preparations. I should say, with the good things you have before you, and our future prospect, you will have a cheerful evening.—Wishing all of you a Merry Christmas and a Happy and Prosperous New Year, I remain, yours faithfully,

C. V. HOWARTH.

—Mr. JOSHUA HURST moved the toast of the evening, "Success to Hetherington and Sons, Ltd.," which was supported by Mr. RAE and duly honoured, Mr. NASMITH responding.—Mr. T. HAGUE gave the next toast, "Success to Our Absent Friends at Home and Abroad," which was supported by Mr OAKES.—Mr. GEO. ROSS also supported the toast, and said they had much to be thankful for and little to regret. Orders were rolling in in good time, so much so that they started the year 1892 with a better prospect of brisk trade, and with actually more spindles on their books by tens of thousands than they had ever had before.—This brought the formal proceedings to a close. The different speeches were interspered with songs by Messrs. G. Tonge, C. Lloyd, F. Stead, A. Joynson, G. Martin, and others, Mr. Stead acting as pianist.

MESSRS. ASA LEES AND CO., LIMITED, OLDHAM.

On Saturday evening, Messrs. Asa Lees and Company's machine erectors partook of their annual dinner at the Swan Hotel, High-street, Oldham. After dinner, which gave the utmost satisfaction, Mr. JOHN CLEGG occupied the chair, and Mr. MILES MAVALL the vice-chair. There were also present Messrs. J. T. Warburton, Mellor, J. Hollingworth, J. K. Stoney, C. Bardsley, W. Jackson, D. Robinson, H. Taylor, J. Sands, Fielding, Langton, Greaves, Haughton, and others.

The CHAIRMAN, in giving the toast "Success to Messrs. Asa Lees and Co.," said they were met at the close of another year to renew acquaintance and to offer words of encouragement and advice, which might help them in the future. He was prepared to say that the quality of work put into Messrs. Asa Lees and Co.'s machines might be equalled, but not excelled. (Hear, hear.) They stood in the front rank of machine makers, and intended to remain there. (Applause.) The annual gathering of Messrs. Asa Lees and Co.'s erectors always brought some new faces and an increase in numbers, thus shewing the gradual growth of the firm. (Hear, hear.) He would just say to the younger portion of the meeting that to them, in a measure, was entrusted the future of that great concern, and he asked them to acquit themselves like men. (Hear, hear.) If a job was worth doing at all it was worth doing well, and the machines, when they left their hands, would help to keep the good name of Asa Lees and Company in the van of progress. When a machine works got to its full size, then usually decay set in, and decay meant in the end death. But he was glad to say that nothing of the sort had occurred in their firm. They had in the past continually found some department every few months getting too small and not able to supply the demand, and that had to be met by extensions and new buildings. There was much talk about a legal eight-hours working day, but he thought the fewer restrictions Parliament put on trade and the better they would prosper. (Hear, hear.) To shorten their hours of labour would handicap them in the race with the foreigner, who worked 70 hours per week, and received considerably less in wages. Trade did not want hampering, but, on the other hand, it required nursing. He concluded by proposing "Success to Asa Lees and Company," a toast which was drunk in a bumper.

Mr. ROBERT CLEGG, in response, said he was sure everybody present was deeply interested in the success of Messrs. A Lees and Co., and daily contributing to its success as a machine-making firm. (Hear, hear.) They were able to turn out over 25,000 spindles per week, and of course the preparation with it. The concern was now known all over the world as one of the leading firms; in fact, it was second to none for the efficiency of the machinery. As everyone present already knew, they had now an order in for the first cotton mill that was to be built in Australia, and yet they were having to enlarge the works to keep pace with the demand. (Hear, hear.)

Mr. R. LANGTON next proposed "The Town and Trade of Oldham."

The CHAIRMAN, on the toast having been drunk, said the name of Oldham was known throughout the world for the machines of Messrs. Platt and Messrs. Asa Lees and Co. Oldham was a household name in India, China, Japan, Spain, Turkey, Italy, and America.

After a clarionet solo by Mr. Joseph Hollingworth, the CHAIRMAN proposed "Absent Friends." The VICE-CHAIRMAN (Mr. MAVALL) responded, and assured them that abroad all was not gold that glittered. On the Continent they had to put up with things as they came, and many discomforts they did not meet with at home. (Hear, hear.)

The CHAIRMAN next gave "The Army and Navy," to which Mr. J. GREAVES replied.

The usual votes of thanks concluded a very enjoyable evening. Songs were rendered by Messrs Robinson, Sands, Taylor, and Fielding. Mr. C. Bardsley accompanied on the piano, and Mr. J. Hollingworth gave several selections on the clarionet.

MESSRS. HOWARD AND BULLOUGH, LD., ACCRINGTON.

The directors, managers, foremen, and setters-up, numbering about 90, assembled at the Victoria Resturant on Saturday week to partake of an excellent dinner. Afterwards the party adjourned to the upper room, where the rest of the evening was spent in a convivial manner. Mr. TOM BULLOUGH presided, and proposed the usual loyal toasts. He then referred to the objects of the meeting, and spoke of the great changes which had taken place, the most notable and painful being the death of their late chief. The Chairman then alluded to the purchase of the works by Mr. George Bullough, the changes that had resulted through the formation of the new company, and the filling of vacated positions, and also complimented them on the very successful working of the past six months.—Mr. SPEAK, foreman of the moulding shop, proposed the toast "Success to Globe Works," and Mr. JACKSON, foreman of the smithy, supported it.—Mr. HORNE and Mr. B. GRIMSHAW responded.—Mr. WHITTAKER (director) and Mr. GRAY (director) proposed and supported the toast, "Our Managers," to which Messrs. FISHER and GORDON replied.—Mr. FISHER submitted, and Messrs. HARGREAVES and PILLING, under-managers, supported the toast, "Our Foremen," and Mr. HARKER, foreman of the grinding department, replied. "Our Travellers" was proposed by Mr. HARGREAVES, and the toast was acknowledged by Mr. T. BULLOUGH. It was evident from the remarks made by the different speakers as to the successful working in the past that, with the same activity in the future, the Globe Works would still continue to prosper. During the evening songs were well rendered by Messrs. Hartley, Ecroyd, Salthouse, and Haworth, and a duet by Messrs. Bancroft and Eastham, violin and 'cello solos by Mr. A and Mr. E. Peltzer, and recitations by Messrs. Mitchell, Whittam, and Nicholls, each contributing to the success, and for the enjoyment of the gathering. The utmost cordiality and good feeling pervaded the meeting, and augured well for a repetition of the event in the near future. Regret was expressed at the absence of their chairman director, Mr. George Bullough, who was, along with his cousin Mr. Will Bullough, on the Continent, combining business with pleasure. It was getting late when, on the motion of Mr. A. Peltzer, seconded by Mr. Hitchon, a hearty vote of thanks was accorded to the Chairman, and the meeting terminated with the singing of the National Anthem.

THE WEAVING TRADE OF GLASGOW.

On Monday night, the 21st ult., a public meeting, under the auspices of the Weavers' Union, was held in the Main-street Hall, Bridgeton, to hear an address from Mr. Mawdsley, J.P., Manchester. The attendance was so poor that it was a quarter-past eight before the ladies and gentlemen invited to sit upon the platform ventured out of the committee room.

Mr. WILLIAM SMART, M.A., president of the Women's Protective and Provident League, occupied the chair, and said that some months ago when they organised the League of which he was president, they heard stories of some favoured district in Britain where the female hands earned 20s. a week. They could scarcely believe that, because the average wage in Scotland of a woman was 10s. a week. However, they sent a delegate to the district—viz., the North of England—and he came back with the report that what they had heard was quite true. The men and women in Lancashire, he said, worked in the same sheds, under the same trades-union conditions, and what was still more important was that many of the women earned as much as the men. They wrought under the Textile Workers' Union rules—Mr. Mawdsley, J.P., being the president of the union. It was a great honour for them to have Mr. Mawdsley with them that night to tell them how the women obtained these high wages

Mr. MAWDSLEY then explained how some of the large firms in Lancashire had their origin. The Houldsworths came from Glasgow, and the M'Connels, Macgregors, and others had a smack of the heather in the phraseology of their names. (Applause.) Somebody asked him how it was that the cotton trade had shifted from Glasgow to Lancashire. Well, he had read the report by Mr. Henderson, one of H.M. Inspectors of Factories, and in that report was given one of the reasons why the cotton industry had migrated from Glasgow to the South. Was it that the West of Scotland lassies were not quite so fond of work as the Lancashire lassies? (Laughter.) If anyone looked at the physique of the two, he would see they were equally strong. No. He never knew of Scotch lassics who were on piecework but they were only too happy to work hard. (Applause.) The Scotch had the reputation of being fond of the "saxpences." (Laughter.) The principal reason for the cotton trade shifting from the West of Scotland down to Lancashire was the lack of enterprise on the part of those who had capital to invest in the business. They had, however, the same thing going on in Lancashire, but not to the same extent. All classes of the people who had saved a little were putting their money into the weaving sheds. New sheds were built, and the result was that they had a hundred new mills erected during the last five-and-twenty years — all through the enterprise of those who had saved a little money. He regretted that the private firms were going down as rapidly as the new mills were being built. In the weaving department, however, the capitalists had taken the matter largely up, but they did not give any of their money for the purchase of machinery. They left those who had saved a little, the overlookers, etc., who had laid up, say, £150 to £200, to club their money together to buy the machinery. These persons got machinery-makers to give them at the start credit for 250 looms if they paid part of the money down. The rest was paid so much per quarter. Well, they went on in that fashion, and in a very short time some of the men with originally a little money became very wealthy. (Applause.) That sort of business could not be done in cotton spinning now, because the larger concerns could produce cheaper and cut them off. But in weaving it could be done in sections, the largest and the smallest being on the same footing. (Applause.) All over Lancashire the rule was for pretty well-to-do people to erect the weaving sheds, the small managers and others who had a hundred or two to invest expending it on the machinery. The trade had not been removed from Scotland on account of any action of the workpeople. In the old days their employers had made their pile, and when they retired nobody came to take their places. Their sons preferred to live a life of ease. (Hear, hear.) The workers in Scotland got 9s. and 10s. a week, and that represented the managing of two looms. They earned in Lancashire a bigger wage, because they attended to more looms. The average wage in Lancashire was 5s. 4d. and 5s. 6d. per loom. For "fancies," handkerchiefs, stripes, and checks, etc., the wage was 6s. 6d. and 7s., and as high as 8s. per loom; but for plain work, such as shirtings and printings, the average was 4s. 10d., 5s. and 5s. 2d.; and on that class of goods it was a big wage when it reached 5s. 6d. a loom. The higher class of work was mostly on handkerchiefs. If the work were pretty broad, and the looms heavy, two looms were a fair number for a young girl to attend to. In the case of an active woman of 20 years, she might attend to three looms; but he should consider that fancy work under that class was very rare. A man could manage four looms with the assistance of a tenter—that was a full-timed assistant, aged 14 years—or two half-time tenters. The man would earn 26s. to 28s. a week, or 7s. per loom. The reason why wages were higher in Lancashire was due to organisation. (Applause.) He believed that the lack of organisation in Scotland had been injurious both to employer and employed. (Applause.) He had found in Lancashire that when organisation had been weakest, work was scarcest and wages lowest. (Applause.) The towns where there was no organisation were the towns in which the cotton trade had gone down. Where a strong organisation was instituted, and where good wages were insisted upon, was the place in which the employers were spurred on to keep up and get the most recent machinery. (Applause.) There in Glasgow, if they were content to work for 10s. a week, the employers thought—"Oh it does not matter," and so they did not push business. They did not introduce new machinery and search for the latest methods to produce their cloths. (Hear, hear.) If they insisted on bigger wages the masters would look about them, where they could economise in other directions. (Applause.) If wages were higher it would be much more satisfactory to both employers and employed. He argued that if the organisation in Lancashire was first founded by canny Scotchmen, why could they in Glasgow not do the same? (Applause.)

Mr. Mawdsley was cordially thanked for his address.

NEW FACTORY REGULATIONS.

The following notice has been issued from the Home Office to all occupiers of factories, calling attention to the provisions of the new Factory Act, which comes into force on January 1st, 1892:—

Gentlemen,—I beg to call your attention to some of the chief alterations in the law affecting factories, consequent upon the coming into operation of the Factory and Workshop Act, 1891. I enclose an abstract of the Act, which is to be substituted for that which has been affixed heretofore.

Safety: Hoists must be fenced whether any person is liable to come near them or not. All dangerous parts of the machinery, as well as every part of the mill-gearing, must now be fenced, unless safe by construction or position; and straps or bands are included in machinery. All places where over 40 people are employed must be provided with reasonable means of escape in the event of fire.

Overtime: In factories where overtime is legal notice of the overtime made must be sent to Her Majesty's inspector before eight p.m. of the same evening, and the particulars of each occasion must be kept posted in the prescribed form.

Holidays: Notice of dates of intended holidays must be posted in the factory during the first week in January, and a copy thereof sent on the same day to Her Majesty's Inspector of the district, but the holidays may, on a fortnight's notice, be afterwards changed.

Child-birth, employment after: A woman is not allowed to resume work till four weeks after child-birth.

Commencing age of children: After January 1st, 1893, a child is not to be employed under eleven years of age, but those legally employed at that date may continue.

Birth certificates: On presentation of the proper requisition, which must be supplied free by every superintendent registrar and registrar, a certificate of birth for any person under 16 is to be given for 6d.

Accidents: For an accident to be reportable it must now, in addition to being the result of the same causes as before, be of such a nature as to prevent the injured person from returning to his or her work and doing five hours' work on any day during the next three days after the accident. The notice of the accident must now state to where the injured person has been removed, as well as his address.

Particulars of value: Every weaver who is engaged in the cotton, worsted, or woollen, or linen or jute manufacture, or as a winder, weaver, or reeler in the cotton trade, and is paid by the piece, shall be supplied by the occupier with sufficient particulars to enable him to ascertain the rate of wages which he is entitled to be paid.

List of outworkers: A very important provision. Every occupier must, if so required by the Secretary of State, keep a list of the names and addresses of all persons to whom work is sent out to be done; and these again, if they send out work, must do the same thing. All the lists to be open for inspection by Her Majesty's inspector of factories.

Special Rules: The Secretary of State may make special rules to apply to any factory, or process, or manual labour that is dangerous or injurious to health. These are to be administered by Her Majesty's Inspector of factories.—I am, gentlemen, your obedient servant,

(Signed) FREDERICK H. WHYMPER,
Her Majesty's Chief Inspector of Factories and Workshops.

THE past year, although for the most part an unprofitable one to spinners, has been a good one for the cotton operatives, insomuch as during the whole period they have been receiving a 5% advance in wages. Several mills have been got to work in the course of the year, which will total a few hundred thousand spindles, while there are about 800,000 spindles in course of preparation. Taking Oldham, Rochdale, Ashton, Stalybridge, Heywood, Mossley, Bury, and Stockport, there are 1¾ million spindles in preparation for work.

THE French Chamber, on December 24, made further progress with the Senate's amendments to the Tariff Bill, and it agreed to those in the Bill giving bounties to hemp and silk growers. While protection is thus making further strides, its results in raising the price of bread and meat are already being felt. M. de Freycinet had to ask the Budget Committee for 12 millions to meet the extra cost this year of victualling the army, the estimates having been based on the prices of 1890. This clearly shews who pay the import duties upon commerce, namely, the consumers of the taxed articles.

THE trial of the two Englishmen, Cooper and Bednell, on the charge of espionage—the former in trying to obtain, by means of a bribe, the copy of certain Russian and French small arms, supposed to be manufactured at St. Etienne, and the latter for aiding and abetting—took place in France on Sunday. The prisoners were found guilty. Cooper was sentenced to 15 months' imprisonment, and to pay a fine of 3,000 francs (£120); and Bednell to two months' imprisonment and a fine of 2,000 francs (£80). The latter gentleman is a teacher of weaving in the Coventry Technical School, and was visiting St. Etienne for the purpose of perfecting his studies in weaving.

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

Speaking from a business point of view there is little to report of our market this week, owing to its practical suspension, arising from the holidays. As observed in a previous report, there was a slightly better feeling springing up, shewing a growth of confidence sufficient to induce merchants to operate on the low basis of prices ruling the fortnight before Christmas. Liverpool likes long holidays, and therefore had decreed three days, and this arrangement forced the hands of a certain proportion of spinners, compelling them to crowd into the market and purchase sufficient for their needs over the holidays during which the market was closed. This, of course, swelled the sales appreciably and again gave a shadow of confidence to the "bull" element in the market with the consequent issue from numerous sources of reports that prices were on the point of starting on a great and permanent upward movement, and that spinners ought to make haste to replenish their stores. Alas for the futility of human expectations. Before business was resumed here on Thursday last prices had quite broken down in America, leading to an immediate drop here of six points in futures and $\frac{1}{16}$d. in spots. Since then we have had the usual range of fluctuation in futures, and the Liverpool market closes in a by no means confident state of mind as to where prices may be found when it reopens on Tuesday next. In the meantime we have only to point once more to the remarkable manner in which facts as they arise justify the predictions we have made in these columns. But whatever may come of any and everybody's crop estimates, the trade should always keep its eye upon the cotton in sight, which is "a thing that winna ding and canna be disputed." The quantity now in Liverpool and at sea for this country, without any more, will suffice, at an average rate of consumption, until the end of July. This should keep them in a calm state of mind, whatever cotton jugglers may do, either here or in the States.

COTTON.—The Liverpool market re-opened on Tuesday, after a closure of three days, Friday, Saturday, and Monday, in a very weak and distressed condition through the break-down of prices in New York and the South. This break-down was brought about simply by the irresistible pressure of the facts of the situation. Spots were weak and irregular, and declined $\frac{1}{16}$d., and futures, after a few spasmodic movements, closed 7½ points down from pre-holiday prices. On Wednesday there was a slight recovery of confidence, and, under the influence of a little more trade buying, arising from the causes referred to above, prices became a little steadier and futures recovered 2 to 3 points on the day. On Thursday this feeling was maintained by a fair amount of activity on the part of the trade. Futures too recovered about 1½ points on the day. The market again closed for the second section of the holidays, and in a mood that could not be called appropriate to the season. In closing we may observe that our tabular statement, owing to the hour at which it is taken, does

not shew the low point to which prices dropped, namely 4-4 on Tuesday evening, and at which point they opened on Wednesday.

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

	G.O.	L.M.	Md.	G.M.	M.F.
American	3 12/16	4	4 3/16	4 3/8	4 5/8
			M.F.	Fair.	G.F.
Pernam			4 1/2	4 13/16	5 1/16
Ceara			4 1/2	4 3/4	5
Paraiba			4 7/16	4 3/4	5 1/16
Maranham			4 9/16	4 13/16	5 1/16
			Fr. G.F.	F.G.F.	G.Gd.
Egyptian			4 11/16	4 7/8 5	5 5/16
Ditto white			5*	5 1/16* —	5 1/2*
	Fr. F.F.	G.F.	F.G.	Gd.	F.G.Fine
M.G. Broach	— —	—	—	3 13/16	3 7/8 4 1/16
Dhollerah	3 3/16 3 1/16	3 1/16	3 1/16	3 1/16	3 1/16 4 1/16
Oomra	3 1/4* 3 3/8	3 1/2	3 5/8	3 3/4	3 7/8 4 1/16
Bengal	— —	3 3/16*	3 5/16*	3 3/8	3 9/16 3 11/16
Tinnivelly	3 5/16* —	3 3/4	4	4 1/16	— —

* Nominal.

The weekly official report not being to hand, we are unable to include the table shewing the business of the week.

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

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

	Saturday.	Monday.	Tuesday.	Wednesday.	Thursday	Friday
December	Bank Holiday.	Holiday.	4·7 s	4·7 v	—	New Year's Day.
Dec.-Jan.			4·7 s	4·7 v	4·7 8	
Jan.-Feb.			4·7 v	4·7 8	4·7 8	
Feb.-Mar.			4·11 s	4·11 12	4·11 12	
Mar.-April			4·15 s	4·15 16	4·15 16	
April-May			4·18 19	4·19 b	4·19 20	
May-June			4·22 b	4·22 23	4·23 b	
June-July			4·25 26	4·26 s	4·26 27	
July-Aug.			4·29 s	4·29 b	4·29 30	
Aug.-Sept.			—	—	—	
Oct.-Nov.			—	—	—	

YARNS.—In yarns business has been slow, owing to the check given to the confidence that was springing up by the break in prices already referred to. Only a quiet trade has, therefore, prevailed, all classes of buyers preferring to wait to see what the second portion of the holidays may reveal. Prices in nearly all departments close weak and irregular.

CLOTH.—Cloth, too, has in the main been very quite, so far as actual business has been concerned. There has been a moderate amount of enquiry on Eastern account, but little result has come of it. In other sections of the market there is not much to report. A general disposition, shewn by the slack attendance on 'Change yesterday to defer all business that could be put off, was manifest.

WOOLLENS AND WORSTEDS.

BRADFORD.—Business here is dull, owing to the holidays. There is a tone of hopefulness as to the prospects for the new year. Late rates are fully maintained, but purchasers are disinclined to contract for anything more than they actually require until the new year. There is no change in the market for Colonial sorts, which are firm, and so also are mohair and alpaca. Noils are still about the same. Amongst spinners there is a disinclination to repeat the orders on which they are at present engaged except at an advance in rates. They also join in the anticipation of a better demand ere long, and do not care to book far ahead in the present unsettled state of affairs. Export merchants do not care to grant the demands asked for, and, consequently, only give such orders as will cover immediate requirements. Pieces are about the same, but there is little doing owing to the holidays.

HUDDERSFIELD.—The market has been rather quiet during the week, owing to the poor attendance of buyers usual at this period. Retailers have, however, been busier in heavy winter woollens, owing to the cold weather, although the sudden thaw on Saturday set matters back again. The wholesale houses are not doing much at present. Fine fancies in worsteds are bought, although many seem to prefer the cheaper medium makes of superior design. Business generally is quiet.

LEEDS.—The cloth market is, of course, characterised by a holiday character, but there have been present some provincial buyers who stood in want of small winter assortments. Thus merchants during the two or three hours that their warehouses were open on Tuesday were able to dispose of certain not very bulky quantities of beavers, presidents, and cheviots, and stoutly-made tweeds, for which full prices were obtained. Very little was doing on spring trade. The cloth mills in town and country were not be re-opened until Thursday, when, except in one or two of the outlying districts, full time will be worked in order to finish off spring and summer repeat orders. Makers of Devon worsteds at low prices have a fair abundance of work before them on account of the ready-made clothing export trade. The turnover of serges seems to have been checked just lately. On the other hand, there is a fair prospect for union cloths and for thin meltons, both printed and plain, and for fancy coatings. In no other respect has there been anything worth mentioning in connection with Tuesday's market.

ROCHDALE.—Trade has been somewhat slack. Stock-taking has now been completed, and from a survey of the year it appears that had it not been for the retirement of certain firms trade would not have been so satisfactory. Amongst remaining firms the usual complaints concerning the competition of flannelette are heard. Government orders are no doubt absolutely necessary in certain quarters to keep machinery fully employed, and it is unlikely that there will be an increase in power. Staplers to-day complain of the meagre business at the present time transacted in wool ; but acknowledge that during the year a fair trade has passed through their hands. The upward prices during the twelve months have been steady, and were maintained at the last London wool sales, for wool suitable for the manufacture of flannel.

HAWICK.—It is believed that the past year's output in the tweed trade will approach more nearly in volume to 1883 than any of its predecessors. Manufacturers who have been shewing new styles for winter, 1892, during the past few weeks to home and foreign buyers, report the demand to be somewhat restricted, and that results, so far, have not come up to their expectations. It is hoped, however, that after stock-takings are finished, buyers may find the outlook fairly promising, and that there will be a full average of repeats, and new orders to fill looms during the spring months.

GLASGOW.—Messrs. R Ramsey and Co , wool brokers, in their report, dated 29th December, say :—*Wool* : There is little or nothing doing in wool this week, all the English firms being closed for Christmas holidays. It is to be hoped, however, that after the holiday season is past, a more active state of things may exist. The supply has been well maintained, and of improved sorts. *Sheep Skins* : The dulness of skin wools operates adversely, and former prices are barely reached, except for the higher qualities.

FLAX AND JUTE.

DUNDEE.—There is practically no business passing in the market this week. The holidays interfere with business. Jute remains extremely firm, and Calcutta telegrams speak of the crop being exhausted. Jute yarns and cloth are not responding to the Calcutta telegrams, and manufacturers are glad to have their works standing for a day or two. There is no change this week in flax, nor in flax yarns

DRY GOODS.

MANCHESTER.—The close of the year in the local dry goods trade found stocks low, as might be expected, seeing that supplies are now kept down by merchants to such a low level. Distributors on the whole have not had a satisfactory year. The fancy departments have been on the whole quiet. Laces, as we have frequently seen during the twelve months, were neglected owing to the prevalence of adverse fashions ; and silks, in the piece, have been quiet for a similar reason, the demand being better, however, for silk trimmings. In the grey and white departments the turnover has been of an average character. Prints have been well sold in certain designs by the better-class firms ; but, on the whole, the business is not in a healthy condition. The spectacle of decaying buildings, formerly used as print works, may be seen in more than one part of Lancashire ; and a reduction in the number of firms competing for the available orders is, in the opinion of many, the only remedy for the existing depression. The home demand for woollens keeps up ; and buyers have been favoured by the presence of the large surplus arising from the diminished foreign consumption.

HOSIERY AND LACE.

LEICESTER.—The week has been a broken one, business being to a considerable extent suspended on Monday. The commercial situation presents few, if any, features of special interest. So far the position amongst hosiery manufacturers is sound.

NOTTINGHAM.—Many of the warehouses having been closed from Thursday to Tuesday there has been very little doing. Some of the factories were closed from Saturday to Thursday.

Gazette News.

SCOTCH SEQUESTRATIONS.

J. Tennent, yarn merchant, Royal Exchange Court, Glasgow.

PARTNERSHIPS DISSOLVED.

James Abbott and Co., grey-cloth agents, Brazennose-street, Manchester.

Mallinson and Grierson, yarn agents and merchants, King-street Mills, Salford.

Joint Stock and Financial News.

NEW COMPANIES.

W. AND J. HUTCHINSON, LTD., BURY.

Capital, £50,000 in £5 shares. Object, to adopt and carry into effect an agreement made between J. R. Hutchinson, of Woodley, Radcliffe, and H. O. Hutchinson, of Elderslie, Prestwich, of the one part, and J. Brown, of Bury, on behalf of this company, of the other part, for the acquisition of the land, cotton mills, and weaving shed known as Daisy Field Mills, situate at Daisy Field, Elton, Bury, Lancashire, and generally to carry on business as cotton spinners and manufacturers, bleachers, dyers, finishers, etc. First subscribers :—

	Shares.
J. R. Hutchinson, Woodley, near Radcliffe	1
W. H. Hutchinson, Liverpool	1
H. O. Hutchinson, Ellerslie, Liverpool	1
T. P. Young, Wallfield	1
J. Brown, 177, Bolton-road, Bury, Lancashire	1
J. Booth, Hazel-bank, Turton	1
B. Turton, 1, Belbeck-street, Elton, Bury	1
J. Hall, The Hollies, Bury	1
J. Parks, Bank House, Bury	1

The first directors are J. R. Hutchinson, H. O. Hutchinson, J. Brown, and B. Turton. Qualification: J. R. and H. O. Hutchinson, 200 shares ; ordinary directors, 30 shares. Remuneration to be determined.

JOHN PILLING, LIMITED, ROCHDALE.

Registered on the 21st inst., with a capital of £80,000, in £100 shares, to take over as a going concern the business of a cotton spinner and manufacturer, carried on at Rochdale, under the style of John Pilling. Subscribers :—

	Shares.
J. T. Pilling, Bridgefold, Rochdale, spinner	1
F. Pilling, Bridgefold, Rochdale, spinner	1
W. Pilling, Bridgefold, Rochdale, spinner	1
J. Pilling, Durley Manor, Bishops Waltham	1
J. P. Butterworth, Grossfield, Rochdale	1
Mrs. J. P. Butterworth, Grossfield, Rochdale	1
L. Matley, Fenton-street, Rochdale	1

The first directors are the first three subscribers. Qualification, £100. Remuneration to be fixed by the company. Registered office, Norwich-street Mills, Norwich-street, Rochdale.

ALPHA MILL COMPANY, LIMITED, DENTON.

Registered on the 21st inst., with a capital of £80,000 in £5 shares, to acquire and work the cotton spinning mill or factory belonging to Mr. Thomas Baxendell, at Denton. Subscribers :—

	Shares.
J. Witham, Fernleigh, Shaw, near Oldham	50
A. M. Fletcher, 173, Knight-street, Dukinfield	50
H. H. L. Fletcher, Pemberton, near Wigan	50
G. H. Hulme, Spotland Bridge, Rochdale	50
J. B. Cocks, 233, Entwistle-road, Rochdale	50
T. Baxendell, Rose Hill, Denton	50
T. Wolfendon, Hanover House, Denton	20

The first directors are the first six subscribers. Qualification, 50 shares. Remuneration, £150 each half year.

EDWIN WALKER AND CO., LIMITED.

Capital, £50,000 in £10 shares. Object, to carry on business as woollen and worsted manufacturers in all its branches, to acquire patents, patent rights, etc., and to develop and turn to account the same ; to lay out land for building purposes ; and to establish and maintain railways, tramways, gasworks, etc. Subscribers :—

	Shares.
E Walker, Greenhead Road, Huddersfield	1
J. C. Pontefract, 8, Ellenor-street, Huddersfield	1
E. Rowbottom, Westbourne-road, Huddersfield	1
B. Pontefract, Leeds road, Huddersfield	1
A. E Nield, Headingley, near Leeds	1
H. Pontefract, 3, Lea-street, Huddersfield	1
S. Pontefract, Field Mill, Huddersfield	1

The first directors are the first five signatories to the memorandum of association. Qualification, 100 shares. Remuneration : E. Walker and J. C. Pontefract, £300 per annum each ; ordinary directors' remuneration to be determined.

PENDLEBURY SPINNING COMPANY, LIMITED.

Registered on the 21st inst., with a capital of £36,000, in £15 shares, to adopt an agreement made between J. Knowles of the one part and Mr. J. Brown (for the company) of the other part, and to acquire and carry on the business of a company of the same name, now in voluntary liquidation. Subscribers :—

	Shares.
J. Knowles, Guildhall Chambers, Manchester	1
J. Brown, 28, Oxford-road, Birkdale, Southport	1
A. Reynolds, 6, Beach Lawn, Waterloo, Liverpool	1
J. Whitehead, Ivy Bank, Swinton, near Manchester	1
F. Reddaway, Pendleton, Manchester	1
T. Dronsfield, Windsor-road, Oldham	1
A. Whitehead, Whitegate House, Oldham	1

The first directors are the first three subscribers. Qualification, 30 shares. Remuneration to be fixed at the general meeting.

EDMUND ASHWORTH AND SONS, LTD., BOLTON.

Capital £100,000 in £10 shares, of which 5,000 are preference and 5,000 are ordinary shares. Object, the acquisition of the undertaking of a sewing cotton manufacturer, hitherto carried on by Edmund Ashworth, at the Egerton Mills, near Bolton, under the style of Edmund Ashworth and Sons, in accordance with an agreement made between E. Ashworth of the one part and B. Thornton, on behalf of this company, of the other part, and generally to carry on business as manufacturers of cotton, silk, woollen, and other threads, including crochet and knitting yarns, cotton spinners, manufacturers, and doublers, spoolers and ballers, flax, hemp, and jute spinners, linen manufacturers, cotton, silk, flax, hemp, thread, yarn and jute merchants, and brokers, wool combers, worsted spinners, woollen spinners, bleachers and dyers, and makers of soaps and bleaching and dyeing materials, bobbin turners, and manufacturers of acids and charcoal, etc. First subscribers :—

	Shares
E. Ashworth, Egerton Hall, Bolton	1
E. Hayworth, Springfield, Blackburn	1
F. B. Ross, Manchester	1
C. E. Ross, Manchester	1
J. Hick, Mytton Hall, Whalley	1
S. Taylor, Stanrose House, Egerton, Bolton	1
B. Thornton, Sunny Lodge, Dunscar, Bolton	1

The first directors are J. Hick, C. E. Ross, S. Taylor, and E. Ashworth. Qualification, £300. Remuneration to be determined.

Patents.

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SPECIFICATIONS PUBLISHED.

1890.

20,553 WILLCOX (*Farbenfabriken vorm. Fr. Bayer and Co.*) Indigo-carmine. 6d.

1891.

1,111 OTTO. Looms. 8d.
1,326 THOMPSON. Looms. 8d.
1,354 IMRAY (*Farbwerke vorm. Meister, Lucius and Brüning*). Colouring matter. 6d.
1,383 ROBERTSON and others. Spinning frames. 6d.
1,395 REDDAWAY. Woven driving belts. 6d.
1,568 PRINGLE. Ropes, cords, etc. 6d.
2,682 LEVINSTEIN. Colouring matters. 6d.
3,872 FIELDING, J. and J. E. Looms. 8d.
12,051 LECHAT. Driving rope. 8d.
12,860 LORD. Drum winding frames. 6d.
12,973 KAY, W. and B. Ring spinning frames. 6d.
13,932 SHEPARDSON. Lap machines. 6d.
16,717 LAKE (*Macfarlane*). Spinning machines. 6d.
16,966 HOTHERSALL and KIPPAX. Towels, bath sheets, etc. 8d.
17,997 INGERSOLL. Drawing in warp threads. 2s. 6d.
18,216 SMITHSON. Drying dyewoods, etc. 8d.
18,351 LUDWIG. Knitting frames. 6d.
18,369 PEESTWICH. Looms. 6d.

ABSTRACTS OF SPECIFICATIONS.

10,731. July 10, 1890. **Knitting.** G. L. OEHLER, Plagwitz, Leipzig, Germany.

Parallel machines.—One of the needle-beds is automatically moved one or more needle spaces in either direction by a segment on a shaft, the segment being operated by one of two toothed sleeves on short transverse shafts. These sleeves are put into operation with the segment by a double cam and levers from a combined pattern and ratchet wheel, the pattern portion being formed by pins or screws inserted into holes in the wheel. To enable the needles to produce meshes of various descriptions, the middle cam is divided into two parts, both of which are moved by slides from stops. These stops are adjusted by bell-crank levers, with or without connecting links, from the pattern wheel. To increase the working capacity of the counter mechanism without increasing the size of the pattern wheel, an auxiliary wheel is provided having the same number of teeth. The driving pawl on each wheel is provided with a disengaging tappet, arranged in such a manner that the tappet engaging with the pins or stops of one wheel arrests the other wheel and *vice versa*. 1s. 8d. *Drawings.*

10,744. July 10, 1890. **Embroidery.** J. MATHIEU, 5 Rue Mazagran, Paris.

Embroidering machines of the "Bonnaz" type, having horizontally revolving bobbins and guides E, Fig. 4, as described in Specification No. 13,121, A.D. 1889, for twisting two or more threads together to form a cord, which is secured to the fabric by the stitches engaging each thread successively, are provided with disengageable means for inserting a wool core *x* in the cord, and for braiding. The wool core *x* is supplied from a bobbin on a carrier which is situated on the top of the machine, co-axially with the needle-bar A, and is rotated synchronously with the hollow sleeve A1 of the needle-bar, by spur wheels and a countershaft connecting the sleeve and carrier, to prevent twisting of the wool; the carrier can be disconnected by removing a bracket carrying the countershaft.

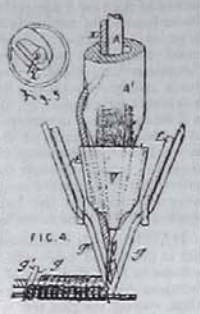


FIG. 4.

The wool passes down through the sleeve A1 and through a perforated nipple V. For attaching braid by sewing along one of its edges, the thread guides F are disconnected, and a spring-pressed nipple is used of the form shewn in the underside view, Fig. 5 having a guide slot *z* for the braid arranged so that one edge is delivered in front of the needle, the other edge being turned up. 8½d.

10,762. July 11, 1890. **Warping machines.** W. A. BOOTH, Bridgewater Mill, Walkden, near Bolton.

In sectional machines the presser bowl is mounted in roller bearings formed in the end of the presser lever. Caps hold the rollers in position. 6½d. *Drawings.*

10,767. July 11, 1890. **Looms.** A. SOWDEN, Spring Field House, Baildon, Yorkshire.

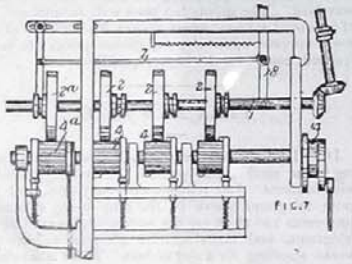


FIG. 7.

Dobbies; change-box motions.—In order to shift the pattern barrel of the dobby to bring different lines of holes under the needles, the barrel is mounted in slotted rocking arms which are operated by a peg-wheel, or tappet chain thereon, such wheel being turned by ratchet mechanism worked by the rocking arm of the dobby. The ratchet catch may be controlled by a needle. The knives may be operated by links and cranks from spaced wheels driven through bevel gearing, etc., the spaces giving a dwell to ensure that one knife shall engage its hooks before the other releases its hooks; locking pieces and rims are provided, as well as hand-driving mechanism and a clutch. When a rocking arm 19 (Fig. 5) is employed, the arms 22 may be operated by tappets 20a, 21, and springs 23. In the change-box motion spaced gear wheels 2 (Fig. 7) are mounted to turn with and slide on a shaft 1 and to gear at times with spaced wheels 4 formed with two sets of teeth and connected with the parts of the compound eccentric 14 from which the boxes are operated. The wheels 2 are set by rods 7 and levers 8 operated by the pattern mechanism. The shaft 1 is driven by bevel gearing, etc., from the tappet or crank shaft. Some of the parts may be modified. Where the boxes are operated direct from the dobby two levers of the latter, of unequal lengths, are connected by a chain passing around a pulley on a bell-crank lever connected with the box lever; the boxes at the opposite side of the loom are operated through another bell-crank lever, connecting-rod, etc. The box-lever may be formed of two lengths connected by a spring catch which yields upon obstruction and prevents breakage; a treadle for operating the boxes may be provided in connection with this lever.

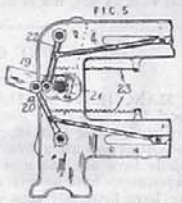


FIG. 5.

Picking-motions.—Extra wheels 29, 42 (Fig. 7) may be provided for controlling the picking tappets.

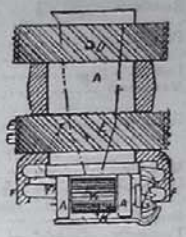
Driving-mechanism.—The Provisional Specification states that the loom is driven by friction discs thrown in and out by a side shaft connected with the stop handle lever and a boss on the friction motion or main shaft. 1s.

10,802. July 11, 1890. **Dyes.** O. IMRAY, 28, Southampton Buildings, Chancery-lane, London.—(*Farbwerke vorm. Meister, Lucius, and Brüning, Hoechst-am-Maine.*)

Relates to the production of colouring matters for dyeing and printing wool. Consists in acting with primary amines, or their sulphonic acids, or nitro derivatives, in alkaline or slightly acid solution, upon the condensation product of hydrochlorate of nitrosodimethylaniline, or of nitrosodiethylaniline and Schäffer's *beta*-naphthol monosulphonic acid. For example, one of the condensation products referred to is heated with a molecular proportion of aniline in the presence of soda lye for several hours, and the melt, after treatment with dilute hydrochloric acid and filtering, is dissolved in boiling soda solution and precipitated by common salt. 6d.

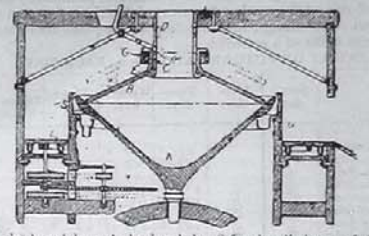
10,777. July 11, 1890. **Spinning.** J. POBRITT, Laurel-street, Bradford, A. POBRITT, Meadow-lane, Leeds, M. POBRITT, Leeds-road, Bradford, and W. H. FENTON, Field-lane, Batley.

Combined drawing and twisting.—Improvements on the invention described in Specification No. 13,649, A.D. 1888. The yarn is drawn and twisted at one operation by means of rollers K supported from a hollow bearing A, through which the yarn is passed. The rollers are rotated about a vertical axis by the skew wheel D, itself driven directly from the main driving shaft, and one of them is rotated on its axle by means of a worm F1 and skew bevel wheel G, the worm F1 being formed on the inside of an inverted cup F on the boss of a loose skew wheel E driven through change gearing from the wheel D. 6½d.



10,788. July 11, 1890. **Centrifugal machines.** H. M. SAINT-DENIS, 1, Boulevard St. Denis, Paris.

Hydro-extractor for drying textile, etc., materials. Above the basin-shaped drum A, having holes S for the discharge of the liquid, is a cover B, which normally rests upon and rotates with it, and is adapted to be lifted while still rotating, so as to form an opening for the discharge of the material under treatment. The cover has a flanged collar C surrounding the feed opening D, and resting by means of rollers G upon a ring E, provided with a device for lifting and lowering. The annular rotating platform I, runs upon rails, and is driven from the shaft of the drum, and carries the discharged material around to the opening O, through which it is pushed by a guide-plate. 8½d.



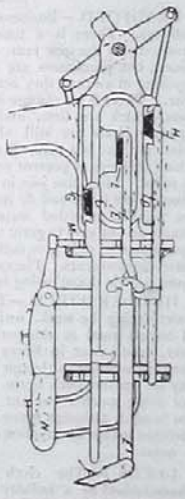
10,892. July 12, 1890. **Ropes.** F. AYCKBOURN, 240, Vauxhall Bridge-road, Pimlico.

Elastic.—The strands of any suitable length of rope are

separated at one end and a piece *b* of solid or tubular vulcanised rubber or the like is inserted and attached to the inner fibres by lashing. The rubber is then stretched to its full extent and the loose strands are plaited or braided over it and fixed by lashing. 6½d.

10,930. July 14, 1890. **Looms.** I. THOMIS, 85, Kensington-street, and M. and J. PRIESTLEY, Copley-street, Horton, both in Bradford, Yorkshire.

Dobbies.—To each heald lever F there is a bar E1 and two draw bars C, D, as well as a centre bar E hinged at S. Two grates are provided, one being formed by the needles M which are each made with three projections for acting on the bars C, D, E, and which are operated by the usual levers N and pattern pegs. When a needle descends one of the draw bars engages with one of the usual knives G, H, and the heald is raised, the bar E being moved far enough to engage with a fixed bar L. The heald may thus be held up for any number of picks until the needle is raised again, to release the bar E, thereby returning the centre bar and the heald. 8½d.



10,951. July 14, 1890. **Knitting.** W. TYLER, King-street, Leicester.

Circular machines.—Certain parts of tubular fabric made on circular ribbed heads, are thickened by producing tuck work by periodically altering the position of the clearing cam. Details shewing how this is done are given. 8½d. *Drawings.*

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