Editorial Notices.

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 Their names will not be published unless requested.

All communications to the Editorial Department should reach the offices, 23, Strutt-street, Manchester, early in the week in order to receive attention in the next issue.

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THE SILK INDUSTRY OF LYONS.

The state of the silk industry in France during the past year was far from being satisfactory to either employers or operatives. Our Vice-Consul at Lyons, reporting upon it for the past 12 months, says the position has been one of continued difficulty, dulness and declining values being the chief characteristics. The movement in raw silk has been, however, more active than in the preceding year, the figures of the Lyons conditioning house shewing for 1891 a total of 11,063,148lb., an increase of about 12½ per cent. This is not, however, an infallible barometer of the consumption, as the same silk may sometimes pass through the conditioning house more than once. Prices, with little intermission, drooped constantly, and the total decline at the close of the year cannot be estimated at less than 10 per cent. This state of the market is attributed to various causes, but the two principal factors may be regarded as superabundant stocks and the fall in the Eastern exchange, which "pro tanto" favoured Asiatic importations. The fall in silver and its consequent reaction in the exchange continues to pre-occupy greatly those engaged in such importations, which present an important feature on this market when we find that, of the above-mentioned total, 70 per cent. is composed of Asiatic kinds as against 30 per cent. of European sorts. It has been remarked that the quotations for the various kinds of raws do not to-day present such marked divisions as were formerly observable, and it is conjectured that these differences may be still less accentuated, as manufacturers learn to turn to the best account the natures and qualities of silks the most diverse in kind. The deficiencies in the European crops gave, during some years, a privilege to the finer raws of France and Italy, but their increased production, coinciding with improvements in the winding of the Asiatic sorts, has resulted in a superabundance of the superior kinds. The instability of prices naturally engendered a cautious policy, but a feeling exists that prices are now so low that further great depreciations are scarcely to be apprehended. Manufacturers complain that during the year they have not been sufficiently employed, that the demand has been largely in qualities of lower grades, and that the margin of profit is most exiguous. The prosperity of the piece-dyed branch of the trade has received some check, to the advantage probably of yarn-dyed pure silk goods; but the plain black silk trade has suffered severely, the reduction being estimated at 40 per cent. Brocaded qualities, on the other hand, have been well maintained; also wool-shot goods with silk warps. During the year the proposed duties on cocoons and raw silks have been successfully resisted, but a duty of 3fr. per kilo. on all imported thrown silk has been imposed, and a system of bounties established in favour of French silk farmers and spinners of indigenous cocoons. Manufactured silk goods imported are subjected to a specific duty, ranging from 4fr. to 6fr. per kilo. on pure silk tissues. Wages have declined during the year. Power-loom weavers have suffered a reduction of from 8 per cent. to 10 per cent., whilst amongst hand-loom weavers it is calculated at from 10 to 15 per cent. The importation of silk goods for the year amounted to £2,875,000, an increase of 11 per cent. The total exports of silk goods of all kinds, including ribbons and passementerie, were valued at £10,500,000, a decline of 8 per cent. The total exports of all kinds of broad silks and ribbons from the Lyons Consular district to New York shewed a slight nominal increase on 1890.

THE LABOUR QUESTION IN THE FRENCH SILK TRADE.

The French silk trade, like other industries, has had its labour question. As in other places, it seems that the views entertained are very conflicting and mutually destructive. No satisfactory conclusion, therefore, has been reached. Referring to this matter in his recent report, our Vice-Consul states:—In April a Parliamentary delegation, charged with an enquiry into the labour question, came to Lyons and heard separately the syndicates of workmen and masters on the diverse aspects of labour, its duration, wages, strikes, and other matters. The workpeople preferred a request that the working day should be reduced to eight hours, but the masters demanded that the State should in no way interfere with the labour of adults. They pointed out that of the silk weavers in Lyons, three-fourths worked at home, and so would escape the regulation; but the power-loom weavers, dyers, and finishers would come under the law. The latter-mentioned trades, dyeing and finishing, were unavoidably subject to fluctuations, periods of depression being followed by times of great activity, and though this was a state of things to be regretted, it was one which no legislation could alter. The opinion was expressed that any State regulation of the proposed kind would have a disastrous effect, and the Lyonese hand weavers were deceiving themselves in supposing an eight-hours day would result in any benefit to them individually. The syndicates of the workmen were quite competent to obtain fair terms from the masters, and such agreements were most beneficial to both sides. The census of 1891 gives the population of Lyons at 430,000, an increase since 1886 of 7½ per cent. The neighbouring town of St. Etienne, the seat of the ribbon industry, has now a population of 133,000, an increase of 15 per cent. in the same period.

THE POLYNESIAN LABOUR QUESTION IN QUEENSLAND.

The importation of Polynesian labourers into Queensland, for which legislative provision has just been made by the Colonial Parliament, is exciting a considerable amount of attention in this country. The great fear is that it will or may ultimately develop into a new system of slavery that will entail a curse upon Australia as great as negro slavery did upon the United States, the end of which has not yet been seen. It cannot be denied that these fears are of a reasonable nature. Men are yet far from being perfect in their moral nature, and though the progress registered in this respect amongst the nations of Europe during the present century may be quite sufficient to guarantee European people against any reversion to systems of slavery in either theory or practice, it would be unsafe to affirm the same of Colonial or independent communities in the other quarters of the world. There is something very powerful in the public opinion of a thickly populated country making for the enforcement of correct principles of justice, which is not as strongly manifested in other conditions. In fact, in the circumstances of newly-founded communities it is found that the selfish sentiments are always disproportionately excited by the tangible evidence of the abundance of natural wealth around individuals, which only needs labour sufficient to transform it into the condition of portability that renders it commercially valuable. The labour capacity of the individual is never sufficient to gratify his sentiments in this direction, as in these conditions he is always in haste to be rich. Hence the cry for labour, more labour, more and more labour; and if it be not forthcoming the passion to become rich tends to develop a desire to impress the necessary element of prosperity, wherever it may be found of the desired kind and quality. This sentiment has often been reinforced by another—that of the supposed or actual incapacity or unwillingness of the persons desiring the performance of labour tasks to do it themselves. These conditions and feelings have always formed the foundation stones of systems of slavery. It was so on the American continent, where the Spaniards first reduced the natives to slavery; and when the raw material from this source failed they began to import it from the African continent. It is the danger that there may be a recurrence of this experience in the case of our Australian colonies if they adopt the practice of engaging labourers from the various groups of islands in the South Seas, because should it in one case become highly profitable it may go without saying that it will rapidly extend to the other communities. In

mitigation of these fears it may be pointed out that the condition of the world is now considerably changed from the period when the old slavery systems were founded; that the equitable sentiments to which we have referred have a wider range of operation and influence than formerly, and that they would strongly tend to prevent such results. With the newly developed sense of equity in mankind, and the sentiment of dread of disaster, combined with the experience the world has had of such springing from the enslavement of peoples, it may fairly be anticipated that these combined influences would be successfully brought to bear to prevent such results accruing again from the causes that formerly produced them. This being the case, under the most stringent regulations and restraints, with provisions for the adequate punishment of those who broke them, the importation of suitable labour might, we think, be permitted, but not without the institution of a system of inspection analogous to that of our factory systems in this country. With such it might be tried, as without the employment of contract labour of this kind it appears to us that the world will have to wait for many centuries before the large areas of the lands recently bought and now coming under the influences of European civilisation can be made to contribute in a degree to anything like their power to the benefit of mankind. That Australia, the island continent, is capable of doing great things is unquestionable; its capabilities, if properly utilised, being such as would emancipate this country to a large extent from dependence upon the United States and Russia for corn, cotton, and wool. For the last-named article it is now and has been for a long time the principal source of our supply, and an abundant supply of labour is only needed to make it the chief and best for the other two.

Italian Sheep-Breeding.

Italian sheep-breeding has its principal seats in the provinces of Latium, the Abruzzi, Apulia, Basilicata, Calabria, and Sardinia. In the other provinces in which sheep-breeding is practised it is restricted to the mountainous districts. The methods followed are in the main those which have been adopted for centuries. The rearing of the sheep in covered folds is quite exceptional. In Sardinia and some regions of Sicily the flocks remain in the open air throughout the year, exposed to all the vicissitudes of the weather. There are many variations of race, but only a few are held in high esteem. In Piedmont the biella sheep is much valued; in Lombardy the sheep of Bergamo, with wool of the second quality. In Venetia the Padua variety is best known. The Marches and Umbria breed the Vissana sheep, yielding the excellent Vissana wool, which is long, full, strong, and white. This wool, which as to fineness belongs to the second quality, is produced especially in the country round Visso, Camerino, and Spoleto. In the Roman Campagna is found the Sopravissana race, which yields the best Italian wool. In the Southern provinces the breeds most prized are the "gentile," with fine wool; in Apulia and the "Leccese," with long luxuriant but small-haired wool. The sheep of Sicily and Sardinia are of small make, and yield abundance of coarse wool. The Barbaresca race, in the province of Girgenti, is that best adapted for industrial purposes. Good results have been obtained by crossing, especially with merino sheep. To obtain better mutton, rams from the Cotswold, Southdown, Oxfordshire, New Kent, and Leicester breeds have been introduced. In order to improve the quality of the wool, Rambouil-let, Chatillon, and Metis-Merinos have been used, especially in the Roman Campagna and in the Southern provinces, and the results of these crossings were in all cases satisfactory. Nevertheless the improvement of the flocks has declined again, and consequently also the demand for good breeding rams, partly on account of the serious drop in the prices of the fine wools, and partly because of the growing preference for mutton over beef, so that the breeder finds attention to the quality of the wool unremunerative. In 1881, the number of sheep in Italy was 8,596,108 head. As far as can be ascertained this number has decreased during the last ten years by about one-fifth, so that the sheep at present bred in Italy may be put approximately at about 6,900,000.

Village Industries.

A correspondent of the *Manchester Guardian* does not share the opinion of some writers that mere economic forces have been the cause of the decay, if not disappearance, of many of our village industries, nor that to restore industrial villages is neither advisable nor possible. When in former times the land was more largely diffused amongst the population and the acreage of individual farms was less than it is to-day, then village industries throve, to the benefit of all classes of the community. The yeoman and peasantry especially were the chief exponents of those industries; but with the gradual extinction of the yeoman, and the reduction of the peasantry to a landless class, their industries also have been very detrimentally effected. The invention of improved mechanical contrivances has undoubtedly worked a certain economic disadvantage to village industries; but this, he considers, does not of itself account for their disappearance, and does not in the least explain why they should not in suitable districts be resuscitated or more largely developed. At this moment even, lacemaking is still carried on in certain of the country parts of Devon, Oxfordshire, Bedfordshire, and Northamptonshire; straw plaiting and hat making in Hertfordshire and Bedfordshire; boot making in Northamptonshire and Leicestershire; and hosiery in other countries, as well as in Irish rural districts. These are not only carried on, but profitably so, though only to a comparatively insignificant extent. In Switzerland silk weaving is carried on in Zurich, Aargau, and other cantons by means of the expensive looms and material which are lent to the peasants by the manufacturer. The same is the case with the machine-made embroidery in the canton of St. Gall. Here, however, as also in Appenzall, there flourishes a trade in hand-made embroidery. Straw and horsehair plaiting for hats is also much in vogue in Lucerne, Aargau, and other cantons. In France, muslin manufacture all round Tarae is largely a rural industry, the great majority of the cottagers being expert in the work. In Normandy and the Nord cotton velvets and plain cottons are woven to a great extent in the villages; and the silk trade is still largely a domestic industry. Very much the same may be said of Germany; while in Italy the peasant women in almost every district where mulberry trees can be grown are fully occupied with silk reeling. Perhaps, however, it is in Russia where village industries are most appreciated and are of the most value; and it is not a little curious to find that they grow and develop precisely in those regions where the factories are also growing up most rapidly. These facts, in the opinion of the correspondent, are sufficient to prove what an intelligent peasantry can do, and to refute the assertion that it is not possible on economic grounds, to revive village industries in this country. He believes, therefore, that whilst one result of the Small Holdings Act will be to place small cultivating owners of the soil upon the land, it cannot fail also to materially assist (combined with the spread of technical education) in revivifying the rural industrial village. This is, no doubt, the correct view of the subject; for it is idle to suppose that village industries *per se* can hold their own against the highly organised factory work of the towns. In old times the rural folk turned to the "industrial" part of their calling when agriculture was dull or was a comparative failure; and if village industries are to be successfully revived, they can only be maintained as subsidiary to the more important pursuit of agriculture.

Matting Weaving in Japan.

The American Government's thirst for statistics and commercial information generally is a thing to marvel at, and is only equalled by the people's craving for gin slings, cock-tails, and corpse-revivers—names more emphatic than euphonious. Thus all things in the earth and on the earth come under the Consular ken, and the manufacture of floor matting in Japan has not escaped. The result is some interesting notes by the United States Consul at Osaka and Hiogo, from which it appears that the annual exports of matting from Hiogo to the United States are valued at about 290,500 yen (1 silver yen=91·7 cents). Of late years a great improvement has taken place in the manufacture of the higher grades of Japanese matting, both in the quality and pattern. The warp of the best qualities is now generally made of cotton yarn or hemp, which greatly adds to the expensiveness and durability of the article. In Japan, as in Great Britain, mat-making seems to be regarded as a very appropriate task for convict fingers, and the following statement, procured from the superintendent of the Okayama convict prison, shews the cost of manufacturing a roll of 40 yards of three different qualities of matting in that prison: Best quality—rush, *Jancus communis* (143 lb.), 6·96 yen; hemp thread (8¼ lb.), 2·50 yen; dyeing, 1·50 yen; labour 12·30 yen; total 23·26 yen; second quality—rush (126 lb.), 5·20 yen; cotton thread (6½ lb.), 2·16 yen; dyeing 0·70 yen; labour 6·15 yen; total, 14·21 yen; third quality—rush (114 lb.), 3·68 yen; cotton thread (6½ lb.), 2·16 yen; dyeing, 0·50 yen; labour, 4·10 yen; total, 10·44 yen. In the Hiogo convict prison matting of an inferior grade is manufactured at about 3·50 yen per roll. The merchants contract with the prison authorities to pay for the labour of the convicts only, the materials being supplied by them. Floor mattings, designated in the United States customs laws as "Chinese mats," are not made of straw, but of a soft rush grown in China and in the provinces of Bizen, Bingo, and Bungo, in the south of Japan, where the manufacture of matting is almost entirely carried on.

Cotton Spinning in Macedonia.

The cotton spinning factories of Macedonia are of comparatively recent origin. Of the two which exist at present at Salonici one has been working for about twelve years, while the other was established only in 1885. It is stated that the former, when it had no competitor, realised profits as high as 20 per cent. Although not reaching that figure now, the two works, in spite of their mutual competition, can both point to excellent results. They produce annually about 300,000 bundles of yarn, each containing 5 kilogrammes. One-third is consumed in the country, the remainder being exported to Turkey and Greece. The counts manufactured are from 4's to 14's, these being most in demand in the district and most suitable for the cotton grown in Macedonia. At Niaousta, a small

town situated a little distance from Salonici, there are also two spinning factories. One of these, which has been in existence for a long period—is prospering. These factories profit by the waterfalls that abound in that region and can easily be utilised. They produce about 220 to 230 bundles per day, each weighing about 5 kilos. The goods are sold in Macedonia, and to a slight extent in Albania and Epirus. The older of the two makes up to count 14's, and the other up to 22's. They employ nearly 180 hands, male and female, most of whom earn on the average from 8d. to 11d. per day. It must not be unnoticed that Niaousta will shortly be served by the Monastir railway. It is therefore possible that this little town might become a considerable industrial centre. These spinning factories enjoy certain advantages which tend to ensure their prosperity: they have for instance the raw material free from duty, and the yarns exported from Salonici to Turkish ports are entirely free from impost. This treatment is accorded only to cotton spinners.

Sir Henry James and his Reward.

We beg to draw the attention of our readers to a report in another column of the speech of Sir Henry James made last Saturday afternoon to an assembly of the representatives of the trades-unionists of the cotton trade on the presentation to him for his services of an illuminated address. Owing to the holidays we reserve our comments until next week.

Abatements for Bad Work: More Trades-Union Impertinence.

Surely the conviction must be deepening in the minds of employers that the time has arrived when the arrogance of trades-union officials must be firmly resisted. We wonder where the Lancashire cotton trade would have been to-day had no supervision been exercised over the work produced as it came from the hands of the operatives. This supervision in a weaving mill is exercised by the cloth-looker, and the practice is to make an abatement from the contract price for weaving when the weaver has badly performed his or her duty, by carelessness or negligence and the omission to "pull back" any serious fault that may have been woven. The common faults for which abatements are made are: weaving with warp threads broken down; "floats" caused by broken threads getting entangled in the warp shed, and tying the warp together so that the shuttle goes over instead of between, and the weft is "floated" on the top; "galls" or frets, these being short spaces of the warp into which weft has not been put; thick and thin places in the cloth arising from the loom having got out of order; and bad selvages. These are the chief faults, but there are a number of others of less frequent occurrence. Every child weaver who is competent to take charge of two looms knows what they are, and knows also that it is his or her duty to keep the cloth free from them, and that if it be not done they are liable to be "bated." This word is a contraction of the word "abated," and the amount so deducted from a weaver's wages is in no sense a "fine," which has the element of punishment in it. The weaver is paid a certain sum for the proper performance of the work, and when this is not to the satisfaction of the cloth-looker he estimates the short-coming and deducts a sum of 2d., 3d., 4d., or 6d., according to the defective performance of the work. In extreme cases the entire sum the weaver ought to have earned upon the piece is stopped. Now we venture to say from an intimate knowledge of both the industrial and commercial side of the question that very rarely indeed is an abatement made from the weaver's wages that is at all adequate to cover the intrinsic damage made in the piece of cloth woven. Were that the case weavers would many a time have to go home without wages at all, because they render the pieces of cloth perfectly unmerchantable. The trouble about the whole matter arises from the fact that neither the weavers nor their leaders have any knowledge of the commercial side of the question, and as to how the cloth is treated in the Manchester warehouses when it has been delivered to the merchant. A few defective or faulty pieces such as we have described, and for which a few weavers may have been fined perhaps 2s. 6d. in all, are quite sufficient to cause the rejection of a whole delivery, or the cancelling of an order. Either of these are very likely to involve the manufacturer in a loss of anywhere from £5 to £250. We have known a case in which the loss has been even greater. We cannot stay to explain how this arose; we simply affirm it to be a fact. What then shall we say of the pretension of the weavers to have their local trade secretaries called into the weaving mills in order to adjudicate upon defects made by weavers and whether they shall be subject to abatements or not? Yet this is now being put forward, as the following note will shew.

Threatening to Strike a Mill for an Abatement.

A local contemporary has the following:—

A dispute has arisen between the weavers employed by the Blackpits Spinning and Manufacturing Company, Limited, Norden, and the firm; and unless some agreement is arrived at a strike will ensue. The matter in dispute is the practice of fining the operatives when the cloth is damaged. Last week a weaver took a "piece" into the warehouse and, it is said, did not hear anything about it until he drew his wages. He then found that an abatement of sixpence had been made, and he was told that it was because the "piece" was damaged. He objected to the fine being imposed, and the money was refunded, but he was discharged. The circumstances were reported to the secretary of the Heywood and District Weavers' Association (Mr. J. W. Ogden), and he went to the mill to examine the cloth; but the company would not allow him to see it. In consequence of this several meetings of the weavers have been held, and the association has resolved that unless Mr. Ogden is allowed to see the "piece," so that he can decide whether the fine was a legitimate one or not, the weavers shall strike work. The complaint is not so much about the fine, but it is claimed that it is a very one-sided plan if the company are to decide what is to be the fine, without giving the weavers' representative an opportunity of examining the "piece" to see if the fine is not too large. On Wednesday afternoon last week, Mr. Ogden again went to the mill, but he was not allowed to see the "piece." A "round robin" had been signed by the majority of the weavers in the meantime, tendering a week's notice to leave work; and this Mr. Ogden offered to the representatives of the company. On the ground that the notices were not legal, those in the office refused to accept it, and Mr. Ogden left the place, but also left the sheet bearing the signatures in the office.

We very greatly doubt the statement made in the above extract that the weaver did not see or hear anything of the defective piece until he received his wages. If, however, this was the case the cloth-looker was much to blame, and the least he could have done would have been to shew the fault in order that the weaver might know for what the abatement had been made, and endeavour to avoid it in future. The secretary of the Union had he then intervened could have very properly been shown the door. Managers, cloth-lookers, and all classes of overlookers, should be very careful against the infliction of any wrong upon those subject to their supervision; and while doing this should firmly insist upon the proper performance of duty and the production of good work. Any carelessness in the insistence upon this and the consequent relaxation of care is sure to entail trouble.

THE INDIAN AND THE ENGLISH COTTON TRADES.

The importance of Indian competition with Lancashire in cotton spinning cannot be disputed, and the more familiar we can become with its general condition, details, and future prospects, the better we shall be prepared for eventualities. In this connection, Mr. John Lancaster, who was formerly manager at Messrs. Ormrod, Hardcastle, and Company's mills, Bolton, writes home an interesting letter from India. He is now engaged by the Khandeish Spinning and Weaving Mill Company, Limited, whose headquarters are Bombay, and he and Mrs. Lancaster are at Julg-aum, which is 261 miles from a presidency town. He is thus what is termed "up country." Speaking of the mill of which he has charge, he says:—"Our mill has 18,000 spindles, one-third ring frames, and the remainder mules. The mules are 700 spindles each, and we have four men and a boy to mind one pair—(this would scarcely pay in Bolton). The roving frames are all tended by men, one to each frame; our slubbers and intermediates ditto; our drawings are three men to one set, or one to each head, and we have 60 roller cards, and 32 men and boys to work them. There are 224 looms, and in the majority of cases one man to each loom. The females are only engaged reeling and winding. In round numbers we have at present on our books or muster roll 760 workpeople."

These simple facts shew one thing that ought to speak with a trumpet voice to Lancashire cotton operatives: that is, that there is in India an inexhaustible supply of docile, intelligent, and cheap labour, which is being steadily and in increasing volume educated and disciplined to supersede Lancashire operatives in their occupation of supplying the world with yarn and calico. It would be a mistake on their part to assume that this large staff of operatives are needed to work this machinery, and that they could not work more. They are employed in such numbers in order that there may always be a fund of trained labour in store to meet any requirements of extension or competition, and this store would at any time enable the employers, if exigency demanded, to reduce present wages 50 per cent. in order to defeat competition, and still not lower the earnings of the workers. The only thing to do would be to allot each man another head of drawing, another side of intermediate and roving, and another side of these short mules. With a reduction of one-half of this staff the machinery would still be double-manned compared with this country. "The same size of a mill in England," says Mr. Lancaster, "would be run with about 160 or 170 people."

Once upon a time—which is now receding into the far distant past—Lancashire had a large trade with India and other Eastern markets in low counts of yarns, spun from Indian and other short-stapled cottons. It went mainly in assorted counts of 8's to 16's and 16's to 24's. To-day, not a bundle of this yarn is sent to India, nor of other yarns of these counts, except a very few small parcels of what are termed "spun down" yarns from higher-class cottons. Where has the trade gone? Mr. Lancaster answers the question, and in doing so points out several other advantages the Indian competitor possesses over the Lancashire spinner, employer or operative. He says:—

We spin chiefly 20's reel yarn, and 16's and 18's warp. We spin up to 28's weft, but it is rather fine for our short cotton. We have not far to fetch our cotton; in fact, there are cotton fields within 100 yards of our mill. None of our cotton is pressed, so we save over 2½ rupees per bale of 250 lb. There are six pressing factories, one of which belongs to my firm. Last season we pressed 68,000 bales, and

cleared one rupee on each, so you see this is no mean place in the cotton trade. We have five ginning factories, so I have seen the cotton grow, ginned, adulterated (watered), boiled, and sent off in ships to England, China, etc Thanks to the new Act, our mills are stopping on Sundays. Formerly they ran as much as three months, and only stopped at 2 p.m. on Saturdays, all the other days being worked from light to dark, varying from 10 to 14 hours, according to the season.

This is an instructive picture, which we would recommend the operatives of Lancashire and their misleaders to carefully consider. With such competition, what are Lancashire's prospects in the early future? What is it possible for Lancashire employers to do in present conditions in the way of procuring employment for workpeople at prices that will merely return the cost of production, let alone making any provision for themselves and families? Is it anything to wonder at that the stocktakings of the Oldham "limiteds" shew such disastrous results? Is it anything to be surprised at that the mills being kept on full-time working are again, at the present cost of production, rapidly filling their cellars with yarns that cannot be sold? We think not. It would be a wonder were it otherwise. A large proportion of the spinning trade has lost its business as we have shewn, and has put in a claim to share at the remainder, with the result that the latter is too much overdone to allow of any profit being made. The knowing English employers are transferring their capital to better fields, leaving Tom, Dick, and Harry to subscribe their shares to mills that, as observed last week, have not made an average return upon the capital of one per cent. for many years past. And many Lancashire working men are doing likewise. Mr. Lancaster is only one of a large number of the best and most proficient of Lancashire working men who have gone out into the world to officer and train competitors with their fellow workers at home—which they have a perfect right to do. Mr. Lancaster goes on to observe:—"Of course, I do not work all these hours. I start with the engine, have three hours allowed, viz., one hour at breakfast, two for dinner, and leave off work about three-quarters of an hour before sundown." And in concluding, he says:—"I expect you will be sympathising with us, but we are very comfortable, are making lots of money, and shall be quite able to retire from work in a couple of years. There are no strikes or lock-outs here as you have at home. I do not know what the unionists will do in the end." He does not know what the trades-unionist will do in the end! Neither do we. And yet, with such conditions and prospects, the unionists, through their leaders, are harassing their employers by every possible means in their power: by extravagant demands; by hounding on the factory inspectors to prosecute employers for infractions of the law committed by themselves; by the procuration of the most tyrannical and self-destructive legislation that can be found upon the statute books of any industrial nation, either of past or present times; and by the destruction of the liberty of people who see these facts with different eyes, and who, by the aid of more intelligence, correctly conclude that the results of their conduct can only be disastrous. Verily whom the gods wish to destroy they first make mad. This is the mental condition to which the leaders of the cotton operative trades-unionists have reduced both themselves and those that follow them. And—strangest thing of all—they have for some time past, in view of the coming general election, been told that the vapourings of this insane state of mind are the axioms of political wisdom! This will last a week or two longer, until flattery has defrauded them of their votes and professional politicians have secured a new lease of power.

In the meantime it is highly desirable that all employers should carefully consider the course of conduct that will best conserve their own interests in the matter. It is of little moment to them which set of professional politicians secure the spoils of office so long as both are agreed to sacrifice them. Let them therefore quickly examine the pretensions and claims of the candidates who may be soliciting their suffrages, and if they have shewn a disposition individually to pander to the ignorant and idiotic socialism so widely rampant, let them do all in their power to thwart the desires and aspirations of these self-seekers. Other things may safely be left to themselves; if the industries and commerce of the country can be preserved, these will come right in the end.

THE CONDITION OF THE LACE AND HOSIERY TRADES.—II.

(By Our Sepcial Commissioner.)

Nottingham *versus* Chemnitz.

Few industries in England have had to contend with such fierce foreign competition during the past few years as the lace and hosiery trades of Nottingham. Chemnitz has, perhaps, been the cleverest and strongest rival in the struggle for the world's hosiery market; and in the cotton branch of the trade, we believe we are not far wrong in saying that the Saxons can beat their Anglo-Saxon opponents. This fact is shewn us by the success of Chemnitz houses in fighting us on a neutral ground, such as the United States. Their dyers have been remarkably successful in cheapening cost of production and in adding to the attractiveness of their productions, noticeably in the case of fast blacks. A very fair idea of the matter, as far as the American market is concerned, may be formed by an analysis of official figures. The only statistics we can present bearing upon the question are those representing our own exports and the imports of the United States. The latter, we believe, consist chiefly of English and German goods. We do not think that any other nations can do much in the American market in cotton hosiery. In the official year 1888—1889, United States imports of cotton hosiery amounted to £1,277,000, and in 1889-90 to £1,429,000. In 1889, our total exports to all countries were £734,300, and in the following year, £663,000. This includes our large South American and colonial shipments, in addition to the United States trade. But if, for the sake of argument, we admitted that the whole of these goods went to the United States, some other country in 1890 shipped £760,000 worth to the Republic. That country must have been Germany, and Chemnitz would have the lion's share of the trade. But it is obvious that the States did not receive all our exports. If, however, we put down the quantity they received from us at £300,000 worth, the Continent, which means Germany chiefly, must have exported £1,129,000 worth. It should be pointed out that the American returns given above are for the year ending June, while our own are for the twelve months ending December in each instance. We think, however, that the comparison is fairly accurate; and that the Germans beat Nottingham in the cotton hosiery trade. Chemnitz is in fact spoken of as the largest producer of knit goods in the world.

This great German industry nevertheless really owes its origin to Lee, of Culverton, near Nottingham, for the first to establish it in Germany were Protestants who fled from France after the revocation of the Nantes edict, and who were first brought to the country by the English divine referred to. Many improvements in the knitting frame owe their origin to Saxon inventors; and the machinery produced in Limbach is exported to all parts of the Continent. Paget's frame, first produced in 1863, was built in Chemnitz the following year. The Cotton frame was not much known in Saxony before 1884, when the German patents for the invention, which was brought out in 1886, expired. It is now being produced largely by German machinists. The extremely creditable results achieved by Chemnitz houses since the passing of the McKinley Bill, referred to by our Boston correspondent recently in his remarks on the importation of seamless hosiery, are a result of the careful training which both employers and workmen receive in the Saxon hosiery industry.

While yielding the palm to Chemnitz as a cotton hosiery centre, impartial authorities consider that Nottingham is the best market to go to for knit goods of wool. A well-known American buyer, who was interviewed on the subject recently, said that while he went to Chemnitz for cotton hose, he preferred crossing over to Nottingham for woollen goods. Labour is cheaper in Chemnitz, it is admitted, but Nottingham appears in other ways to have got the best of the trade. The fact is one which reflects credit upon the manufacturers of the town, of whom there are about forty. This is about two-thirds the number to be found in Leicester.

In the opinion of many, the Nottingham lace curtain trade has suffered more from outside competition than the fancy lace trade of the town. The number of people who find employment from each machine is about 20; and a few years ago there were 550 curtain machines in Nottingham. Whether the number has increased or not since then it would be difficult to say without an actual count. The removal of machinery to the United States during the past year has injuriously affected the trade; as did similar transfers to Chemnitz, Plauen, Leipzig, and Ayrshire, a few years ago. The industry has been rather more busily engaged during the past few seasons; but of late another falling-off is apparent. The rural districts of Nottinghamshire and Derbyshire are also keen competitors with the parent centre, and under the circumstances any immediate expansion of its productive capacity in curtains appears unlikely.

Owing to the incomplete classification of our Board of Trade returns, the imports of foreign lace goods cannot be given, the figures applying to "cotton manufactures of all kinds," without specifying the respective contributions of lace, curtains, and other goods to the total of between two and two and a half millions sterling, at which our annual purchases under this head are valued. In the opinion of experts, more cotton lace enters the English market from Plauen and St. Gall than from all the world besides. It may be added that the Board of Trade figures as affecting lace have been frequently condemned as most unreliable.

Reviews of Books.

Lancashire Characters and Places. By Thomas Newbigging. Manchester: Brook and Chrystal; London: Simpkin and Marshall.

This little volume consists of a number of those delightful sketches in writing of which Lancashire business men imbued with literary tastes like to indulge when "off duty." Mr. Newbigging is, if we mistake not, a "north countryman," but one who by long residence in Lancashire, a keen faculty of observation, and a correct appreciation of the sterling qualities of Lancashire people, has

become thoroughly naturalised, and is now as much a Lancashire man as the best of those who by birth and heredity can claim the title. His personal associations have mainly been with that section of Lancashire comprehended within the bounds of the ancient forest of Rossendale, of which he is the historian. His writings have also mostly been devoted to its topographical description, and his types of character in his sketches have generally been selected from the same area. His descriptions of both are very gracefully written and true to nature. Whilst asserting this, we may observe that the title he has chosen for the collection of sketches under notice is slightly misleading, owing to being too comprehensive. The Forest of Rossendale is not "Lancashire;" it is not even East Lancashire. Owing to the geographical features of the district the dwellers in the several deep valleys, shut off from intercourse with each other by what in the olden days, antecedent to railways, canals, and modern highways, were almost impassable ranges of hills, developed such striking personal peculiarities in speech and manners as to effectually preclude the description of one being interchangeable with that of another. The people of Colne, Burnley, Padiham, and other places in Pendle Forest, differ very widely indeed both in speech and manners from those of Rossendale; whilst those of Blackburn, Accrington, and Darwen, and other places in the south valley of the Ribble, to say nothing of those of the country north, present characteristics of that stream widely divergent from those in the watershed of the Irwell. The fact that the commercial capital of the county is located in the southern portion has no doubt done much to obscure or prevent the north-eastern half from becoming known as widely as its merits in many respects entitle it, whilst the nearer districts and their peculiarities have been accepted as a true reflection of the whole: but this assumption is not correct. The proper title to this work, we submit, would be "Rossendale characters and places," as out of the fourteen sketches included in it there are only two that can be said to get out of the watershed of the Irwell and its tributaries, and most of them have their subjects in the valley itself. We must not be understood in any sense to be finding fault with the author for confining his attention to Rossendale and its characters; he has dwelt amongst its people, studied them thoroughly, and, in Lancashire phrase, 'hasthem off to a T."

The sketches are all pleasantly written, and afford the reader glimpses of some notable Lancashire men who have passed away, such as Leach, Prince, and Waugh. The sketch of the second of these, with whom the present writer had a slight personal acquaintance, is very correctly appreciative. It is a great pity that Prince should have been the victim of such a degraded weakness as we know was the case; we consider, however, that he was quite as much sinned against as sinning. When will the world learn that if a man displays genius it does not follow as a consequence that they should for ever be inviting him to drink? Poor Prince was not the only sufferer in this respect amongst our Lancashire rhymsters. The remaining character sketches are entertaining, and well repay perusal. In that of the little Factory Doffers the writer has hit off very skilfully the characteristics of an interesting class of our mill operatives.

Of the topographical sketches the two upon Rossendale and the Irwell should be read together as in reality constituting one. The attempts made in these to elucidate the origin and meaning of the place names are not, however, altogether satisfactory as regards their results. If the place names of the county and the personal names indigenous to it were systematically treated and correctly elucidated, they would throw a great deal of light upon the nature and operation of the forces whose conjoint action in early times, along with later agencies, have resulted in the making of modern Lancashire. This, however, has yet to be done. We have much pleasure in commending the volume to the notice of those of our readers whose tastes incline in the direction of the subjects it deals with.

Bleaching, Dyeing, Printing, etc.

CHLORIDE OF ZINC.

(By M. W. Jones, F.C.S.)

Since heavy sizing became such an essential feature in the manufacture of certain qualities of cotton goods, this chemical compound has been largely used by sizers, for the double purpose of preventing the formation of the fungoid growths known as "mildew" upon the fabric, and at the same time keeping the goods soft to the touch. This latter effect is due to the great power that chloride of zinc possesses of absorbing moisture from the atmosphere and retaining it within the folds of the cloth.

Chloride, or, as it is generally called, muriate of zinc, is a compound of the two chemical elements chlorine and zinc. It can be prepared in a variety of ways in a laboratory, but on a manufacturing scale it is always obtained by dissolving either spelter, sheet zinc, zinc flux, or any similar substance rich in zinc, in commercial hydrochloric (or muriatic) acid, another name for which is "spirits of salts."

When made from any of the above-mentioned substances, chloride of zinc is always more or less impure, that made from spelter being usually the purest. The chief, and at the same time most objectionable impurity, is iron, which having been dissolved by the acid exists in the liquid as chloride of iron. Unless removed it will gradually absorb oxygen from the atmosphere, turning the colour of the liquid first straw colour and finally a reddish brown, and producing upon the cloth that peculiar reddish tint so well known and dreaded by manufacturers. Fortunately this objectionable feature can be readily eliminated by a chemical process, and now chloride of zinc in both solid and liquid condition is found upon the market, the percentage of iron in which is only to be detected in the second or third decimal place, and for all practical purposes it may be regarded as absent.

Pure chloride of zinc in the solid state is white and crystalline in appearance, and is extremely deliquescent; that is, it has the power of readily absorbing moisture from the atmosphere, thereby gradually assuming a liquid condition. It possesses a biting and metallic taste, and is extremely poisonous.

Large quantities of this solid product are annually manufactured in this country, and although comparatively little of it is used at home, it finds a ready sale in Indian and other foreign markets, as its compact bulk, when packed in lead-lined casks, admits of convenient exportation. Objections have frequently been urged against the difficulty experienced in getting the hard solid substance out of the casks when required for use. This difficulty, however, would be readily overcome if the manufacturers could only be induced to spend a little more time over the final process, as by a simple arrangement the solid substance can be packed in a granulated form, thereby allowing of easy manipulation when required.

The following analyses of samples of solid chloride of zinc from different makers may be taken as representing the average qualities of such products now upon the market:—

	Per Cent.		
	No. 1.	No. 2.	No. 3.
Chloride of zinc	98·72	98·42	83·68
" " calcium	0·16	1·84	trace
" " magnesium	trace	trace	5·38
" " sodium	0·88	0·98	6·20
" " ammonium	absent	trace	2·84
" " iron	absent	trace	trace
Sulphate of zinc	trace	trace	0·81
Moisture	0·25	0·76	1·09
	100·00	100·00	100·00

It is in the liquid condition, however, that chloride of zinc is best known to the consumers of this country, and, as such, it is generally sold at a strength somewhere about 1·500 sp. gr. (100° Twaddell). In this condition it appears as a clear colourless liquid, and contains varying proportions of chloride of zinc, together with such impurities as are shewn in the following analyses. When such impurities exist in large quantities, they have generally been added in obedience to the wishes of the consumer, for use in connection with different grades of cloth; and as a natural consequence several distinct qualities of liquid chloride of zinc are now upon the market. If in the following table I designate No. 1 as being a commercially pure article made from spelter, and No. 2 a commercially pure article made from flux, the other analyses will shew at a glance the chemical composition of various qualities compared with the genuine article, although it must be distinctly understood that the actual proportions of the various impurities vary with different makers and localities, and according to the demand:—

	Per Cent.			
	No. 1.	No. 2.	No. 3.	No. 4.
Chloride of zinc	43·55	44·06	30·42	19·93
" " calcium	0·19	0·61	0·41	1·37
" " magnesium	0·04	trace	0·32	trace
" " sodium	1·01	1·80	10·98	21·03
" " ammonium	absent	2·14	6·73	5·61
" " iron	trace	trace	trace	trace
Sulphate of soda	0·32	trace	trace	trace
Water	54·69	51·39	51·14	52·06
	100·00	100·00	100·00	100·00
Specific gravity at 60° Fahr.	1·480	1·500	1·490	1·490
Equal to degrees Twaddell	96°	100°	98°	98°

So long as the user of impure chloride of zinc is aware that the liquid he buys contains a certain percentage of adulterants all is well, and nothing can be said against the addition of such impurities to the solution. But if the purchaser buys what he considers to be a commercially pure article, which, however, contains a large proportion of such comparatively non-antiseptic substances as the chlorides of sodium and ammonium, then a deal of damage may ensue, for the low percentage of chloride of zinc in the solution will cause him to calculate wrongly. For, whereas he finds that a fixed amount of commercially pure chloride of zinc will protect a definite quantity of size from mildew, a sample containing less than that amount of the antiseptic property would be liable to produce such fungoid growths, thereby causing more or less damage to the goods in connection with which it was used.

Therefore it would be well for users of chloride of zinc to purchase a commercially pure article at the outset, and, after having had a sample tested by a recognised chemical authority, to add such impurities as they desire: and they would certainly find that the addition of such foreign matters can be done at a far cheaper rate upon their own premises than the original manufacturers will do it for.

In some of the books upon sizing and sizing compounds, details are given of the best methods of roughly estimating the comparative quantities of foreign salts present in solutions of chloride of zinc. Although the methods given are, as a rule, perfectly accurate and fairly concise, yet there is an amount of skilled manipulation required even for such simple testing which can only be obtained by practice, and the amateur analyst who works by the book is often as much in the dark at the close of his labour as he was at the commencement. Hence more satisfaction will be obtained on all sides by submitting any questionable sample to a recognized chemical authority.

TENDERING OF COTTON BY ANILINE BLACK.

It is a well-known fact that cotton dyed with aniline black produced by the so-called oxidation method is materially tendered. A writer in the *Oest. Wollen und Leinen Indust.* gives the results of some experiments on this point. He dyed cotton by twelve methods, and estimated the loss of strength in each case. The results are as follow:—(1st.) Black, dyed in a liquor of 7°Bé., made with aniline salt, potassium chlorate, and copper sulphate: the cotton lost 20% of its strength. (2nd.) A similar liquor, but using sodium chlorate, tendered the cotton from 25 to 30%. (3rd.) The cotton was mordanted by passing through copper sulphate,

then through sodium sulphide, and dyed in a liquor of 7°Bé. of aniline salt and potassium chlorate: loss in strength, 15%. (4th.) The cotton was passed through Turkey-red oil, then through copper sulphate, then in the same liquor as in No. 3: the loss in strength was 20%. (5th.) Cotton first passed through iron bath, then through soda, then dyed in the same liquor as No. 1: the loss in strength was 20%. (6th.) A liquor of 7°Bé., made with aniline tartrate, potassium chlorate, and copper sulphate was used, when the loss in strength was 20%. (7th.) Aniline liquor of 7°Bé., made from aniline salt, aniline oil, potassium chlorate, and copper sulphide: the loss in strength was 12%, but the black was liable to be uneven. (8th.) Similar liquor to that used in No. 7, but containing starch: the loss of strength was 10%, but the black was liable to be uneven. (9th.) Similar liquor to No. 7, but containing dextrine: the black was very liable to be uneven, the loss of strength being 10%. (10th.) An aniline liquor at 7°Bé., made in aniline salt, potassium chlorate, copper sulphate, and antimony salt: loss in strength was 15%. (11th.) The cotton was bottomed with Diamine black RO, then dyed in an aniline liquor of 5°Bé., made with aniline salt, potassium chlorate, and copper sulphate: the loss of strength was 15%. (12th.) Cotton bottomed in diamine black RO, diazotised, and developed with phenylene diamine, then dyed in a liquor of 3°Bé., made with aniline salt, potassium chlorate, and copper sulphate: loss of strength was 8%. This method gave the least tendering of the cotton, but the black was the least fast, for the bottoming does not fully resist exposure to light and air. Oxidation blacks, owing to the loss in strength, cannot be recommended for dyeing yarns that have to be woven. The one-bath method is the best for fast blacks, but they rub very much; by careful working, however, this rubbing can be reduced to a minimum.

SOCIETY OF CHEMICAL INDUSTRY.

Among the papers down for reading at the last meeting of the Manchester section of this society were some bearing on the textile industries. Dr. C. O. Weber read the second part of his "Researches on the formation of lake pigments." He referred especially to the formation of

LAKES FROM THE ACID COAL-TAR COLOURS,

and said that the reason these lakes had hitherto turned out so unsatisfactory was because the precipitant, such as barium chloride, only acted on one of the two or more groups present in the colour. When barium chloride was added to a solution of a dye containing the sulpho and amido groups, the former only was precipitated. The colour was soon washed out of cotton dyed with a sulpho basic colour, because the cotton had no affinity for the acid group. If, however, the cotton was previously mordanted with tannic acid and tartar emetic, and then placed in a solution of a basic sulpho dye, on the addition of barium chloride to the bath the colour was precipitated on the cotton. By such means as this the author had produced good and fast colours from sulphonated methyl blue and kindred dyes. By satisfying the respective affinities of the different groups in an acid colour in this way, the problem of the preparation of lakes was solved.

In another paper, Dr. Weber referred to

OIL AND IRON STAINS IN COTTON CLOTH.

Though the stains of fatty oils could be removed by washing, those from mineral oil remained a source of trouble. Iron stains might be removed by a moderately strong solution of oxalic acid or bisulphite of soda. When, however, oil and iron stains occurred together, as frequently happened, they proved difficult of removal. He recommended washing in a bath consisting of one part soft soap, one part glycerine, and three parts water.

In a paper on the analysis of

TURKEY-RED OIL,

the author, Mr. J. A. Wilson, stated that a good deal of the oil at present in the market, and purporting to be produced from castor oil, was adulterated, to the damage of dyers and printers

Mr. Carter Bell communicated a paper entitled "Notes on various oils." This paper had special reference to the

OILS USED IN WOOLLEN MILLS

and the experiments which had been undertaken for the insurance companies, who, it appeared, were particular that only fatty and not petroleum oils should be used. By saturating wool with various oils and exposing it to the temperature of boiling water, great variations were observed in the rise of temperature. The amount of oxygen absorbed by wool greased with the different oils was also found to vary. These tests were given as a guide to the liability of the oils to spontaneous combustion. The tests confirmed the general idea that moist wool or cotton heated sooner than when dry, but he could not confirm the generally accepted theory that white wool was more liable to spontaneous combustion than dyed wool. Various cloths greased with 8 per cent. of olive oil and exposed to the same temperature gave the following rises:—Dark green 600°F., drab 420°F., brown 524°F., white 360°F. He had never been able to get spontaneous combustion with the proportions of oil used in the woollen mills.

A BLUE may be dyed on cotton by first passing through sumac, then through an iron bath, dyeing with alizarine, and topping with indigo. The cost of the labour must be great, although the blue will be very fast.

ACCORDING to a French patent, China grass may be bleached by boiling in 1½% solution of manganate of soda for from two to five hours, washing in water, and steeping in sulphurous acid or in bisulphite of soda to dissolve off the brown deposit of oxide of manganese which is formed on the fibre.

A METHOD of producing designs or ornamental effects in a variety of colours on textile fabrics has been patented in this country. The principle of the process consists in producing on the piece a deposit of lead sulphide or some other metallic sulphide that possesses colour, such as, for instance, lead, copper, iron, or manganese sulphides. This is done by first impregnating the fabric with a salt of the metal, *e.g.*, lead acetate, copper sulphate, or copperas, then treating this with sulphuretted hydrogen or a solution of a soluble sulphide, when the sulphide is formed. The next proceeding is to print on a discharge containing as an essential constituent peroxide of hydrogen, which acts by oxidising the sulphide to sulphate, which is colourless, and is deposited as an insoluble body (lead sulphate) in the fibre, or is soluble and is therefore washed out. By mixing with the discharge some coloured body on which peroxide of hydrogen has no effect, coloured designs may be produced, and it will be seen that by varying the nature of the discharges so printed on, a variety of effects may be produced.

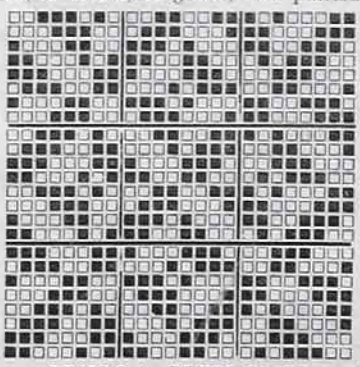
Designing.

NEW DESIGNS.

COTTON DRESS GOODS.

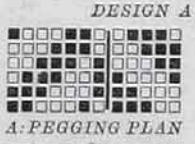
Design A is on 6 shafts, 12-end draft, 12 to the round, all threads two in a treadle, and two picks in a shed; 20 dents per inch, 4 in a dent, 30's twist; 80 picks per inch of 30's weft; 31 inches breadth in reed. First warp pattern: 12 red, 12 cream, 12 green; weft pattern the same. Second warp pattern: 6 green, 6 red; weft the same. Third pattern: 2 dark blue, 2 red, 2 dark blue, 6 white, 2 light yellow, 6 white, 2 yellow, 6 white, 2 yellow, 6 white, 2 yellow, 6 white, two yellow; weft pattern the same. Fourth pattern: 4 red, 2 light blue, 24 cream, 4 dark blue, 2 light blue, 24 cream; weft pattern: 28 cream, 2 red, 28 cream, 2 blue. All varieties in colours and shades may be used, either in the form of stripes or checks; beetle finish.

Design B will furnish an immense number of stripe patterns, either in shirtings or dress goods. The colour may be varied at will, and if the separate sections of the draft be gone over repeatedly, the width of the stripes may be increased to any size. It is on four shafts, 4 to the round; a very simple weave, 40 dents, 2 in a dent; 24's for warp; weft, 60 picks per inch of 18's cotton. Warp pattern: 18 white, double end of green, double end of red, 20 light blue, 2 orange, double end, 2 dark blue, double end; weft all white. Second pattern: 18 cream, 4 dark blue, double ends, 20 cream, 2 purple double end, 2 yellow double end; weft all cream. Third pattern: 46 ends all light fawn, 4 light blue, 4 red, 4 light blue, 4 red, 3 white, 3 dark blue, double end pink, double end green, 20 white, double end green, double end red; weft all white. Fourth pattern: 18 white, 4 ends double violet, 20 white, 4 ends double orange; weft pattern exactly as the warp; the violet and orange weft 2 in a shed.



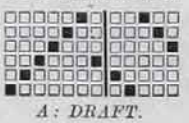
DESIGN A: DRESS GOODS.

B: PEGGING PLAN.

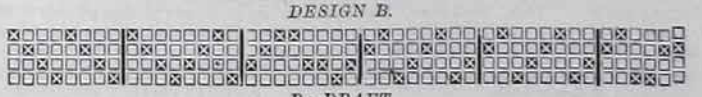


A: PEGGING PLAN

DESIGN B.



A: DRAFT.



B: DRAFT.

THE firm of Johann Abraham Ernst Wuester has just erected a new ribbon factory in Barmen.

HERR LADISLAUS BARTEN is erecting a large steam dyeing works in Boehm-Skalitz.

HERR J. PRIBYL is building a power-loom weaving shed in the neighbourhood of Neustadt, in Bohemia.

THE firm of Brauenlich and Wintersteiner, dyers and finishers, in Bruenn, is enlarging its dyeing works at Fischer-gasse No. 8, by an additional shed.

THE factory premises of Jacob Pick, Hermann S. Doctor, and Isaac Mautner and Son, all in Nachod, are about to be extensively enlarged. In each of the two last named, 200 power-looms will be installed.

A LARGE piece of land in Georgswalde has been purchased by the Upper Lusatian firm of C. A. Roscher, in Altgersdorf, for the erection thereon of a loom factory intended for the needs of Austria. It will have adjoining an iron foundry.

PATENTS IN 1891.—According to the ninth report of the Comptroller-General of Patents, Designs, and Trade Marks, just laid upon the table of the House of Commons, the total number of applications for patents last year was 22,888, as compared with 21,307 in 1890. Of the nine applications made to the Privy Council for extensions of the terms of patents, two were acceded to, and two refused, the remainder not having been disposed of at the end of the year. The receipts from the sale of the office publications amounted to £6,142, which sum was paid over to the account of the Stationery Office. The number of applications for registration of designs was 21,675 (excluding sets of designs, of which there were 277), as against 22,235 in 1890 (excluding 318 sets of designs). No fewer than 545 designs were refused registration on account of their similarity to designs already registered, while 1,104 applications were objected to by the Comptroller-General. In the case of 1,005 of the objections, the applicants acquiesced without claiming a hearing, and in 82 cases the objections were waived after some correspondence. Of the 107 opposed applications which were accorded a hearing, 44 were accepted without alteration, 55 were refused, and eight were accepted subject to modification. In regard to trade-marks, there were 10,787 applications, as compared with 10,258 in 1890; 4,456 trade-marks being advertised, and 4,225 registered. The total receipts from various sources on account of trade-marks were £11,034, including £2,345 on account of renewal fees. The number of applications under the provisions of the International Convention for the Protection of Industrial Property was 171.

Machinery and Appliances.

IMPROVED PATENT SPINDLE FOOT-STEP PROTECTOR.

MAKERS: MESSRS. E. JAGGER AND CO., WERNETH METAL FACTORY, OLDHAM.

The greatly accelerated speed at which all classes of machinery is now worked, compared to what was the case a few years ago, has brought into prominent view the great necessity of machine makers and users paying every attention to what were before slight details in various points of construction and working. But in nothing has this become more strongly evident than in matters affecting lubrication; and in nothing under this head has the urgency of improvement and increased care become more developed than in the lubrication of the spindles of our spinning machinery, whether it consists of mules or ring frames, or of the various frames worked in connection with these in the preparation. By neglect of proper lubrication the costly plant of our splendid spinning mills can very soon be rendered worthless, and fit for little beyond breaking-up purposes; whilst with proper attention and the adoption of improved appliances, the life of every machine, though working at the accelerated speeds to which we have referred, may easily be prolonged beyond what has been regarded as the average duration of machinery life.

We have much pleasure in drawing the attention of our readers to a simple yet valuable improvement just effected by Messrs. E. Jagger and Company, Oldham, whose previous inventions in this respect are well known. This consists of a spindle-step cover. The protector is formed in a continuous rail, so as to entirely cover the line on which the steps are fixed, in exact imitation of the well-known "plate-step," and it has for its object the provision of the same facility for oiling, and the prevention of the oil running down the spindle rail, and preventing the protectors from falling off the steps and getting lost. It also carries the step covers, which, although attached to the plate, are self-adjusting each to its own individual step, and fit inside them in the same manner as if they were single, although the steps may not be exactly straight or perfectly level. They thus thoroughly prevent the lubricant from being thrown out by centrifugal force and the dirt from getting down to the bearings, and thereby ensure more perfect lubrication, prolonging the life of the machines and economising oil.

The accompanying illustrations need little description to enable them to be fully understood. Fig. 1 shews the cover *a* raised from the steps, from which it will be readily understood how easily it is cleaned, several covers being lifted at once. The projections *b* are so formed as to fit right into the cups of the steps *c*. Fig. 2 shews the protector with continuous rail *a*, in position on the spindle rail *d*, the back edge *e* of plate *a* of protector being raised to prevent the oil running down carriage board or spindle rail, and guide it into the steps. Thus it will be seen that the arrangement precludes the waste of oil common in the old method, and by preventing the revolution of the spindle ejecting the oil, or, what is much more wasteful, its being pumped out by lifting the spindle in the process of doffing, the great object is achieved of maintaining perfect lubrication, and preventing waste of oil with the dirt and risks that are attendant upon it. We are informed that with this arrangement applied the spindles of mules will run for weeks after once oiling. What this means in the saving of bands, straps, and the diminution of power required in driving the machinery of a large mill, shewn in the saving effected in the coal bill, will be obvious to our practical readers. Fig. 3 is a sectional view drawn full size, which shews the details of construction:—

Continuous plate *a a* having holes spaced to gauge of spindles, and counter-sunk so as to conduct oil into the steps. Solid brass *c* forming step-bearing for spindle. Wood spindle rail *d*. Raised edge or bead *e* to prevent oil running over at back of rail *a*. Oil in step *g*. Space *h* underneath depressed shield *i*. Depressed shield *i* forming cup for oiling, allowing oil to enter and preventing its return. Air space *k* so constructed as to prevent the oil being drawn out of the step cups by capillary attraction.

For any further information application may be made to the makers as above.

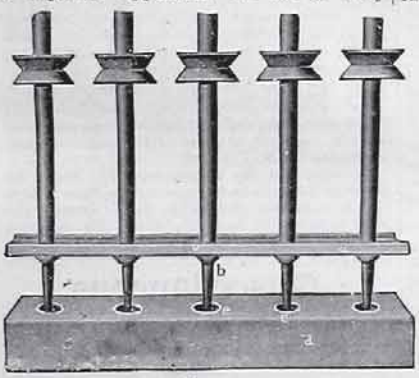


FIG. 1.

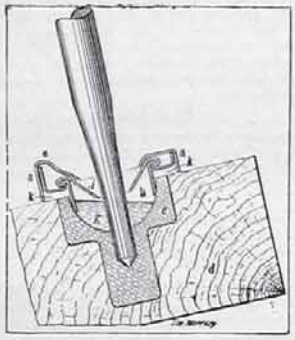


FIG. 3.

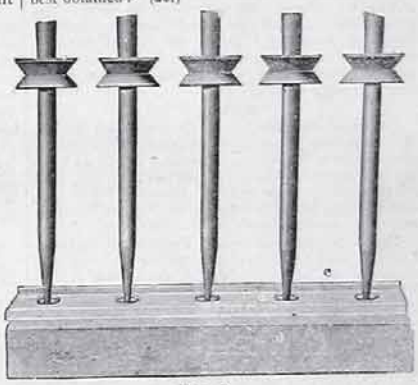


FIG. 2.

Technical Education.

CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION.

The following paper was set at the recent examination. The papers on the other textile subjects have already appeared in these columns.

LINEN WEAVING.

Instructions: The candidate must confine himself to one grade only, the Ordinary or Honours, and must state at the top of his paper of answers which grade he has selected. He must *not* answer questions in more than one grade. If he has already passed in the first class of the Ordinary Grade of this subject, he must select his questions from those of the Honours Grade. Point paper is supplied to each candidate for Honours. The number of the question must be placed before the answer in the worked paper. *Four hours allowed for this paper.* The maximum number of marks obtainable is affixed to each question. Not more than *ten* questions to be answered in either grade.

ORDINARY GRADE.

1. What is the standard length of the following:—A thread, a lea or cut, a hank, and a bundle of linen yarn? (20 marks.)

2. Give a description of the ordinary dressing machine for linen yarn; pay particular attention to the method of driving the loom beam. (35.)

3. Give draft and treading plan of the following:—(*a*) 4 shaft huck for towelling; (*b*) 4-shaft diaper or diamond, with 8 ends and 8 picks; (*c*) 5-leaf broken twill; (*d*) a honeycomb pattern. (30.)

4. You have a web to draw in, counting 50 beers on 5 leaves, on 30-inch reed space, and have only healds available as ordered for 28 beers on 3 leaves, on 27-inch scale, but wide enough. How many heddles should you cast by, and at what intervals? What reed should you use? (35.)

5. What would you consider good average speeds at which to drive the following:—

(*a*) Plain linen looms working yard wide material, medium yarns and counts; (*b*) heavy linen looms working 8/4 to 10/4 sheeting? (15.)

6. Sketch the mechanism of the weft fork; fully explain its action and adjustments. (35.)

7. If the cloth is turned out varying in thickness of weft, name as fully as possible the faults in the loom which may be causes. (30.)

8. In weaving twills and damasks, would you work with the bulk of the warp above or below the shuttle? Give your reasons for the practice you recommend. (30.)

9 Shew the method of weaving centre selvages with a doup heddle, and describe some mechanism used to obtain the same result in a more perfect way. (25.)

10. Describe the worm wheel let-off motion, and give sketches. (30.)

11. What is meant by the standard number of a loom in finding the changes? Give an example of its use, employing the standard of any loom you are familiar with. (25.)

12. What is meant by cover in cloth, and how is it best obtained? (20.)

13. Give the formulæ for calculation of warp and weft, making in each case proper allowance for shrinkage. Apply to the following: 62 yards 17^{00} on 40-inch reed, 19 shots in 37-inch glass, 38 inches wide. (40.)

HONOURS GRADE.

1. Describe as fully as possible, with sketches, the ordinary dressing machine for linen yarn. Pay particular attention to details of driving arrangements. (35 marks.)

2. You are required to weave a hurried web of 70 beers 5 leaf drills, 30-inch scale, and have no heddles of this count. What is the nearest plain count you can use from stock? If any cast by heddles are required, give the proper instructions, and order a reed to suit. Cloth is to be 32 inches wide. (25.)

3. You are weaving a 14^{00} plain web, square wefted, 70's warp and weft. It becomes necessary to increase the weft to 16 shots in 37-inch glass; will the cloth be shorter or longer? and why? If it be also necessary to keep the cloth an equivalent texture, what should be the counts of the new weft? (30.)

4. Construct a pattern for a dice cloth 8^{00} on 40-inch scale, square wefted. The dice to be half-an-inch square in the cloth, of two distinct ornamental weaves; the healds not to exceed eight shafts. Shew draft and treading plan. (40.)

5. A tappet for 16-pick pattern is to be driven from crank shaft; pinion on shaft cannot have less than 16 teeth; what pinions and intermediates would you use if tappet wheel is 120 teeth? (20.)

6. Describe accurately and fully, with sketches, the mechanism and adjustment of the weft fork motion. (30.)

7. Give a description of the picking motions of both over and under-pick looms, and explain the adjustments required when starting looms first, both with regard to time and force. (35.)

8. What is the standing number of a loom in calculating change pinions? Find the change pinion for 17 shots in the 37-inch glass on the loom which gears as follows:—Ratchet wheel, 40 teeth, moving one step

Only; intermediate wheel, 120 teeth; intermediate pinion, 20 teeth; roller wheel, 120 teeth; roller, 4¼ inches diameter. (40.)

9. Describe and sketch the take-up motion geared direct to cloth beam, as used for very heavy linens. Detail anything requiring special attention in the other motions of the loom to enable you to weft the cloth fully up to its capability. (40.)

10. Compare the Norwich and London ties in damask mounting. Explain what constitutes, in your opinion, the advantages and disadvantages of each method. (20.)

11. Explain clearly the use and action of pressure harness in damask weaving. (30.)

12. Describe the ordinary Devoge card cutting machine, as used for 8, 10 and 12 row machines. (25.)

13. Construct a pattern for double cloth, shewing one face plain and the other 4-shaft twill. Put a spot on the twilled side with an altered weave, and shew the two faces properly bound together. (40.)

News in Brief.

ENGLAND.

Barrow.

The other day about 70 double loom weavers employed in the Barrow Flax and Jute works struck against being compelled to work double looms without apprentices and at a reduction of 3d. per cut. A meeting of workers was held, when some of them stated that it was impossible to do the work. It was pointed out to them that before they could strike they must obtain the consent of the committee in Dundee. It was then decided to return to work, and work only one loom, and let the manager lock them out if he liked. The girls, as advised, went back to work next day, but only started one loom each. To this the foreman objected, and refused to let them stay unless double looms were started. They refused to do this, and he ordered them away. They accordingly left.

Bolton.

The recent statement in these columns that the late Mr. Hoyle was formerly part proprietor of Bridgeman-place Machine Works was incorrect. About 42 years ago he acted as bookkeeper at the above works, and left this position to manage the Wheelton Twist Co., near Chorley, in which company Mr Richard Threlfall, machinist, was largely interested at that time.

The machinists from Messrs. Dobson and Barlow's, Limited, who have been engaged for the last few months at the mill of Messrs. William Clark Co., at Rhode Island, New Jersey, U.S.A., were given a picnic and supper on May 21. The above-named firm supplied the whole of the machinery for carding, combing, and spinning, the following Boltonians having been engaged on the work of fitting:—Messrs. G. Berger, M. Berry, F. Bottomley, W. Cooper, H. M. Guy, T. Hall, sen., T. Hall, jun., H. Hardman, E. Hardman, John Taylor, E. Pennington, and W. H Welsby. A most enjoyable evening was spent, and Messrs. Clark Co. came in for many expressions of goodwill.

Burnley.

Mr. Grey, cotton manufacturer and a Liberal member of the Town Council, died on Monday, after a long illness.

The failure of Messrs. Hargreaves Brothers, cotton manufacturers, Higham, near Burnley, is announced. Liabilities about £1,000. Assets about £365. A committee of creditors has been appointed.

Bury.

The machinery required for the No. 2 mill of the Peel Spinning Co., Bury, is being supplied by Messrs. Platt Bros. and Co., Oldham.

Leigh.

Messrs. Jones, Bros and Co., Leigh, are having a large chimney erected at their extensive cotton mills

Mr. T. Smith, one of the heads of the firm of Messrs Gamble and Smith, Brookside Mill, has made an offer of £40 to the hands at this mill towards a trip. They have decided to go to Keswick.

Manchester.

During the past week samples of 32's twist spun at the new spinning mill recently erected in France by an English syndicate have been shewn on the Manchester Exchange, and they have been pronounced to be very good specimens of yarn. The yarn has been spun from cotton at 4 1/16d. per lb., and on mules which are said to be running as quickly as any in this district. The minders work 72 hours per week, and receive 25s. each per week.

Oldham.

The mills being erected by the Parkside and Royal Spinning Cos. are covered in and ready for windowing.

During the past week the Holly Spinning Co. has had five pairs of mules at work, and others will shortly be ready for spinning.

About a dozen pairs of mules, together with an adequate amount of card-room machinery, are working at the Ellenroad Spinning Co.

It is reported that the formation of a limited liability company to erect a large mill at Lees has been abandoned.

We understand that Messrs. J. Meredith-Jones and Sons, Cambrian Leather Works, Wrexham, are about to open branch works in Oldham.

In the list of mills erected since 1889, which we gave last week, we omitted to state that Messrs. Platt Bros. and Co. supplied the machinery for the Richmond Mill, belonging to Messrs. Murgatroyd and Stansfield, Oldham.

In the replacing of the mules at the Smallbrook Spinning Co. arrangements are being made with the object of interfering with production as little as possible. Messrs John Hetherington and Sons, Manchester, are supplying the new machinery.

Mr. Charles Wilkinson, son of Mr. David Wilkinson, secretary of the Sun Mill Co., has been appointed assistant secretary at the Fern Spinning Co., Shaw, one of the most successful concerns in the Oldham district.

It is gratifying to learn that Mr. S. R. Platt, head of the firm of Messrs. Platt Bros. and Co., machinists, Oldham, who some days ago had an accident on his yacht, *Norseman*, is progressing very favourably. His thigh was broken by falling down the companion-way whilst on a trip to Madeira. He was for some days detained at Queenstown, and subsequently the yacht, when proceeding to England, had to put into Waterford owing to bad weather. However, he arrived at Bangor on Monday, where he will remain until he progresses further towards recovery.

Ramsbottom.

Mr Henry Stead died on Monday, after a prolonged illness, at the age of 63. He was a member of the firm of Messrs. Lawrence Stead and Brother, the largest spinners and weavers in the Ramsbottom district. Altogether they had about 2,000 looms. The deceased was the last of the brothers. About 16 months ago Mr. Stead, who was a Conservative, was appointed a county magistrate.

Rochdale.

The machinery for the new mill of the Moss Spinning Co. has been supplied by the three firms, Mr. John Mason, Messrs. Taylor, Lang & Co., and Messrs. Platt Bros.

Tyldesley.

The building of Messrs. C. Wright and Co.'s new mill has now reached the top (fourth) storey. The other work is being pushed on as rapidly as is possible with efficiency

Owing to the depression in the cotton weaving trade about 200 weavers employed at Messrs Burton and Son's mills have been given eight clear days holiday, exclusive of the two Sundays about Whit-week.

Haslingden.

On Monday, before the Mayor (Mr. Hamilton) and other justices, Ernest Taylor, a spinner on strike at Hazel Mill, was summoned for assaulting William Parkinson, a non-union spinner at Hazel Mill.—Mr Hindle prosecuted, and Mr. J. L Whitaker defended.—Complainant stated that on May 24 he was in a beerhouse adjoining the mill, and the defendant and other strike spinners were in the room he entered. Defendant asked witness if he could find him spinning, and witness said he had nothing to do with it, he must see the overlooker. Defendant said witness deserved his —— guts and whiskers punching off for working there, and then struck him a blow on the mouth with his fist, and another strike hand named Waters said, "Punch his guts out; I'll back thee out." Witness left the house, and on going out heard defendant say to a man called Nuttall, "Jack, thou mustn't say anything about it; we'll threap it out of him and say he struck first."—John Nuttall corroborated the evidence of complainant in every particular.—Defendant called five witnesses to prove that no assault had been committed. They had been out of court during the hearing, and their evidence was rather contradictory. The Bench fined defendant 10s. and costs, and also ordered him to pay the advocate's fee, the total amounting to £2 10s.—William Waters, another strike spinner, was brought up in custody charged with using threatening language to Samuel Johnson, a non-unionist employed at Hazel Mill.—Mr. Hindle prosecuted, and Mr. Whittaker defended.—Complainant stated that on 24th May he was standing at Pilling-street, Acre, when prisoner came up, and referring to Hazel Mill, said witness "had gone on very quietly until now, but it was going to commence, and threatened to knock his —— head off." Witness moved away and prisoner followed, but a police-officer then appeared and prisoner behaved himself. Prisoner had threatened witness several times, and he was in bodily fear of him and others.—Lawrence Lord said he heard defendant say that he would rive Johnson's —— neck out.—Mr. Whittaker called the defendant, who denied having any malice against the complainant. He (defendant) was one of the strike hands at Hazel Mill, but had now got work at the Moss Spinning Co., Rochdale, and would go there right away if they would allow him to leave the court.—The bench ordered prisoner to enter into recognizances himself in £10, to keep the peace for six months and pay the costs, which, including advocate's fee, amounted to £1 18s.

SCOTLAND.

Brechin.

The East Mill Co., Brechin, have had in course of erection for some time past a new engine, which has now been completed. To allow of the connections being made work was suspended on Friday night of last week for ten days The employés are to receive a week's wages.

Dundee.

A notice has been posted in the Dundee Linen Works (Messrs Butchart, Lindsay, and Co.) to the effect that after this week the works may be closed at any time without further warning. There are between 200 and 300 hands employed.

Forfar.

The short-time movement in Forfar factories is being gradually curtailed. Messrs. William Laird and Co., Canmore Works, have resolved to work one day longer in the week, operations to cease on Friday instead of Thursday evening as before Messrs Laird are also to start additional looms, which will mean the re-engagement of a number of hands who were dismissed.

Glasgow.

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

	India and China.	U.S. and Canada.	W. Indies & S. America.	Australasia.	Africa and Egypt.	Continent.	Totals.	Totals for year to date.
£	19,784	6,795	2,859	328	385	—	30,162	1,824,994
	—	5,981	651	—	83	827	7,542	400,066

The following are the total values of the exports for the same twenty-three weeks of last year:—Cotton, £1,751,919; linen, £350,279.

We learn that Mr. George Sedgwick, H.M. Inspector of Factories for Glasgow and the West of Scotland, is to be succeeded by Mr. E. T. Dawson, late junior inspector for the Leeds district Mr. Sedgwick removes to Walsall on the 1st of July next.

Miscellaneous.

THE WOOL INDUSTRY OF THE PUNJAB.

The United States Consul-General at Calcutta, in a recent report to his Government, states that the Punjab, with its 6,551,180 sheep and its 83,000 maunds of wool, annually made into shawls, carpets, blankets, etc., holds an important place in the sheep and wool industry. Shearing in the Punjab is done twice a year generally, though in a few of the districts there is an intermediate shearing in June. The wages paid consist of one-twentieth of the wool shorn. A man can shear 20 unwashed and 25 washed sheep in a day. Wool sorting in the Punjab is done in a very primitive style, and in some parts it is not done at all. Washing of the wool is not common, nor is it very necessary, except in the case of wool loaded with sticky matter. Unless done carefully, and with suitable soap, it is very bad for the wool, and picking by hand or some other process is, in every case, still necessary for the removal of burrs, thorns, seeds, etc., which are entangled in the fibres. The picking out by hand of foreign bodies is done everywhere. It is a very tedious process in the case of wool grown in places abounding in thorny bushes and undergrowth, and the workers are nearly always women.

The mere process of hand-picking involves a certain amount of teasing out of matted portions of wool; but where scutching and combing are uncommon—a state of affairs which appears to exist in the Jung district, and in Jullinder and Ludhiana—something more than this is necessary. The wool must be reduced by hand to a mass of fluff; but to effect this, in most districts, either the *pinjan* (bowstring) or the comb is used. A bow is suspended, string downwards, at such a height that the string passes through the wool to be operated upon.

The string is then made to vibrate violently, either by twitching it or by striking it with a hammer, and the vibrating string catches up and scatters the wool about. The instrument is used in nearly every district of the Punjab, and nearly everywhere the work is done by men of some low caste. In most places there is a separate caste of *pinjas*. The bowstring and the comb are not merely alternate instruments for effecting the same purpose: the former opens out the wool and loosens its mass, but leaves the fibres lying confusedly in all directions; the latter tends to open the wool, and also to lay the fibres side by side in parallel lines. The former is used when woollen thread is wanted; the latter when the spinning of worsted is the object. The combs used in the Punjab are of two sorts, single and double. The double are reported to be used only in Gujurn-walla, Amritsir, and Lahore, and the single comb is found in Sialkot and the Ferozepoor. The double comb (*shana kanga*), which is the more effective of the two, consists of a piece of wood laid on the ground, with two parallel rows of vertical iron teeth standing on it, there being twenty teeth, about four inches high, and the intervals between the two rows and between the teeth being one inch and one-half inch respectively. The teeth are rigidly fixed to the platform, which is kept steady by the operator's feet. He does the combing by taking a flock of wool, striking it upon the teeth, and drawing it gently downwards through the teeth at a right angle to the rows. The single comb is a very primitive instrument, and has very imperfect effects. In its rudest form it is a mere *panja*, or claw, which cleans rather than combs. Neither the single nor the double instrument is used for combing short-stapled wool, nor could it be employed with any effect for such a purpose. The wool, when teased, or scratched, or combed, as the case may be, is made up into balls (*punis*).

The next operation is spinning. The *charkhi* is formed of two parallel discs, the circumferences of which are connected by threads, and over the drum so formed passes a driving band, also made of thread, which communicates a rapid motion to the axis of the spindle. The end of a *puni* is presented to the point of the spindle, which seizes the fibre and spins a thread, the *puni* being drawn away, as the thread forms, as far as the spinner's arm will reach. The thread is then slackened, and allowed to coil itself on the body of the spindle until the latter is full, when it is removed. In some parts, notably in Cooloo, the *charkhi* is quite unknown, and the instrument used is the *dherna*, or *takli*, a pointed instrument, similar to the unattached spindle of an old-fashioned spinning wheel, with a disc at the blunt end. A portion of the *puni* is drawn out and held to the upper part of the instrument, and wound round it. The *dherna* is then spun round in the hand, and when it has got firm hold of the wool, it is allowed to hang in the air suspended by the thread it is spinning, the right hand of the operator keeping up the rotary motion, while the left hand regulates the draft of the wool. When the thread is getting so long as to put the *dherna* out of reach or to let it touch the ground, the draft of wool from the *puni* is stopped, and the piece that has been spun is wound on the *dherna*. The *charkhi* is said to produce a more even and reliable thread than the *dherna*, owing to the great regularity of the rotary motion in the former machine.

In the hills, spinning is done by all classes of both sexes and all ages, from ten years and upwards. Consul Merrill says that in Cooloo every tenth person met on the road is spinning wool with a *takli*, as he or she walks along, and it is no doubt the portability of the instrument, as much as anything else, that causes it to be used instead of the *charkhi*. When yarn has been spun, it is generally found that it is too thin, in places, to bear the strain of weaving, or when a coarse thick fabric is required. The yarn has, therefore, to be doubled or trebled, and sometimes more than three folds are given. For twisting, as this process is called, the *charkhi* can be used, and also a form (called *masan*) of the *dherhna* or *takli*, the difference being that the upper end of the spindle has a narrow, curved groove, about half an inch long, running from the point along and round the rod, and in this groove the threads, twisted together, are run. Yarn, single or double, is sold in the hills, in balls or on reels of various shapes; but, before weaving, it must be wound on reels, and the warp prepared. Two reels are fixed at the end of sticks on a pivot, on which they can revolve. A double row of sticks or reels is then planted on the ground, at intervals of about two yards, extending either in a straight line or in a loop to the length which the piece of cloth is to have. The warp-layer then takes a stick and reels in each hand, and walks along the line, dropping the threads, one inside and the other outside the sticks alternately, so that the two cross each other between each pair. Having got to the end of the line, the operator returns in the same way, and so on, up and down, until enough thread has been laid to make the required width of the fabric. If the cloth is to have a longitudinal stripe or a check, reels of different colours are used, and the proper number of threads is laid on with each colour. Some of the wool used in the Punjab is brought from Beloochistan, where the pasturage is peculiar, and from Cashmere, where the water is said to contain valuable qualities. Thousands of the inhabitants of Cashmere, in the last 50 years, have come over from their native valley to settle in the Punjab, and, encouraged and assisted by European agents, have engaged in the manufacture of shawls.

SIR HENRY JAMES AT BURY.

REPLY TO *THE TEXTILE MERCURY.*

The textile operatives in the counties of Lancaster, York, Chester, and Derby, in recognition of the Parliamentary services rendered by Sir Henry James, M P., in their behalf, presented him on Saturday evening with a beautifully illuminated address in a massive gilt frame, and enclosed in a large oaken case The proceedings took place in the Co-operative Hall, Bury, and were attended by about 800 delegates In acknowledging the testimonial,

Sir Henry James, who was received with loud cheers and the singing of "For he's a jolly good fellow," said: Mr. Chairman, ladies, and gentlemen,—My experience in public life has now not been short I have often to take part in many gatherings and to take a conspicuous part in many scenes which have placed me prominently before the public, but I have never during that life been placed in a position of such difficulty—a difficulty of expression—as I have been placed to-day. I am sure I am not using words of exaggeration when I say that your kindness has almost overwhelmed me, and made it difficult for me to express my gratitude to you I recognise the presence of those delegates who have journeyed long distances to do me this great honour. (Applause.) I recognise the kindness of the words with which I have been spoken of (Applause.) I accept this handsome testimonial which Mr. Mawdsley on your behalf has been good enough to present to me (Applause) It is exactly the recognition I would desire to receive of your good opinion of my poor efforts. (Applause) Mr. Chairman, there is a difficulty attaching to me in expressing all I desire to express to you; because if I were to copy or to follow those who have already spoken from this platform, I should have to speak upon a subject of which I never like to speak—namely myself. (Loud applause) I would rather speak of those efforts which have been put forth by others towards the same end. (Applause) Mr. Mawdsley, I have been following a path that has been trodden by those who went before me at a time when it was a difficult path to journey upon. (Hear, hear.) You have spoken of the difficulties that attend in the present day the obtaining of necessary legislation, to remove the defects, and to create new laws; but those difficulties are very slight to what they were when the great men whom I have followed with unequal steps and at a long distance from them wanted. They encountered opposition, and they encountered difficulty, which in this time and in this day we know nothing of. In the first place, there were in their day greater evils to be removed, far deeper-rooted reforms to be effected. But above and beyond these difficulties, there was in that time no sympathetic audience to appeal to. There was no public opinion to back the reformer when he attempted reform. (Applause.) We have, Mr. Chairman, to cast back a long retrospect to cover the whole period of which I speak. It is just one hundred years ago that two medical men with knowledge and experience of the state of our factories first called public attention to a state of things unworthy of any civilized country to allow to be in their midst. (Cheers.) It was as early as the year 1802 that a manufacturer in this very town, the first Sir Robert Peel—(cheers)—himself an employer, himself a manufacturer, introduced a Bill into Parliament demanding the reform that was necessary, demanding that the time worked by the operatives in the factories should be lessened and that protection should be given to women and young children. (Hear, hear.) Well, he had at that time no public opinion to aid him. I am avoiding what may be called political topics, but this is historical, that in those days the franchise was in such a condition that no operative—without the slightest exception—had any vote to give. There was in fact no public opinion to assist the reform. (Hear, hear.) Time went on and there was little reform effected, until immediately after the passing of the first Reform Bill. That widened the franchise and placed public opinion upon a truer and a surer basis. It was not until the year 1833 that that man of whom the chairman and Mr. Holmes have spoken—I mean Lord Ashley—(cheers)—introduced his Short Time Bill; and although we then failed to carry it, the Government of the day accepted it in a modified form, and we find there the first basis of the proper regulation of factories. (Hear, hear.) Well, sir, it is history with which you are all acquainted. In 1844 Lord Ashley introduced a Bill over which the country was much exercised, and by which the Government was much shaken. He failed for a time, but in 1848, when he was absent from Parliament, his labour bore fruit, and by slight degrees we came on until in 1874 a very charter for factory operatives was enacted, 1878 seeing the consolidation of previous Acts and improvements in them effected. Now we come to this very day, when our poor efforts have added something to the success of those who have preceded us, and when we have made one step forward in that progress which will ultimately lead us to a farther goal, and a further consummation. (Applause) Now, Mr. Mawdsley, at this time we have none of the difficulties to encounter that those to whom I have referred to in their efforts had to deal with. In those olden days it was, as Cobbett had said, a fight for mercy against Mammon. (Hear, hear.) Well, sir, I am certain I shall express the opinion of everyone present if I say that it is no such contest now, and that the employers of this country are alive to the interest of those whom they employ, and are willing—the great mass of them—to meet fair and moderate demands—to consider and deal with them. (Hear, hear.) Mr. Chairman, sir, those who attempt to effect reforms have always good men to aid them. May I bear my testimony, in confirmation of yours, that the operatives of this county have friends—sincere friends—now within the walls of Parliament, ever willing to assist them, and ever willing to see justice effected for them. (Cheers.) Sir, I should be bearing an undue amount of honour to-day if I did not say that the work that has lately been effected has only been partly due to me. I had men to counsel me, I had men whose experience guided me. I need only refer you, Mr. Chairman, to Mr. Birtwistle, to Mr. Holmes, your executive council, whose moderation of demand, whose justice on the reforms suggested, formed the very basis upon what the success of all our efforts was founded. (Applause.) I refer not only to such guidance and such counsel, but there were those who had more experience in dealing with the cause o. labour than I had. I speak especially of my good friend, Mr. Anthony J. Mundella. (Hear, hear.) The operatives of this country never had a better friend than he. (Hear, hear.) His practical knowledge—his acting sympathy of heart, is ever beating time with efforts to meet the evils that exist, and to remedy them. He had ever been shewing such a feeling towards the operatives of this country. We had also the great assistance in carrying on the Act of 1889 of Sir Henry Roscoe, whose scientific knowledge enabled us to deal with the relative proportions of humidity and heat, and which certainly, I hope, if not yet a perfect success, will bear fruit—good fruit—in future. (Hear, hear) I had, too, the good counsel and the most discreet judgment that pertains to Sir Wm. Houldsworth. I had, too, the good assistance of our secretary, Mr. George Howell, whose letter has been read, and I may lay special emphasis upon the services of my friend, Mr. Mowbray, who is present to-day. (Applause) Now, Mr. Mawdsley, it was under such comparatively easy conditions that I had to attempt to discharge the duty that you personally, and others with you, had asked me to undertake, and approach the performance of that duty, first as the representative of the operatives of this town, who had the right to claim from their representative such assistance as he could afford, but not only to those in this limited area, but their brethren throughout the country. Sir, I approached it with great misgiving, first on account of my want of technical knowledge; also the want of confidence I had in my general power to deal with such questions. You know, Mr. Chairman, that it was not without diffidence and without great consideration I yielded to your request, but you have rightly said that when once I did accept your invitation and when once I satisfied myself there were evils that ought to be remedied, and

hat they could be remedied without inflicting injury upon the combined interests of the trade, I admit, sir, I set my hand cheerfully to the plough and I did my very best. (Cheers) Mr. Mawdsley, I say I thought the demands the trade through their representatives made were reasonable demands. I thought it was not too much to ask that the general sanitary conditions of your factories should be placed in the most satisfactory position they practically could be placed in. I read that Blackburn evidence, which was given unchecked, and one had to make allowance for it on that account, but I came to the conclusion there was a great deal of truth in it. I read the reports of such men as Dr. Barwise—(applause)—and one could not doubt that the lives of both young men, and young women especially, were being sacrificed to the excessive temperature that existed in our weaving sheds. Well, sir, the remedy that we sought to impose—whether it is sufficient either in its theoretical enactment or whether it is sufficiently carried out or not I will not wait to discuss; but the provisions that we submitted to the Legislature and which the Legislature approved of—were so framed that they could not inflict any injury upon any employer, that they could in no way hurt any trader, that they gave no advantage to any foreign competition, and yet, at the same time, will enable us to do something to secure that condition of things that will render the lives and the health of our operatives more secure from unnecessary danger. (Applause.) Mr. Chairman, surely it was not too much to ask that those small matters of general regulations in factories, the sanitary conditions, the comfort, the very decency almost of our operatives, should be more considered than they were. It was not too much to ask that there should be provision made so that no danger from fire should occur, and so that there should be means of escape for operatives in case of fire. We did not ask so much as the protection which is afforded to every person who visits a theatre in London or in any large town; and surely the operatives had the right to say, in the construction of buildings, it would not impose any great burthen or obligation upon their employers if provision were made so that they should not go to their death if fire ensued within the building in which they worked. (Applause.) I think no one could complain of want of moderation in our demands if we asked that there should be more security in the fencing of machinery. I think, too, they could not complain if we made a demand that greater facility of enjoying the holidays the operatives receive should be enforced by legislation; and, sir, there was one provision which I know was much questioned at the time which I regard as being as just and as fair a demand as any body of moderate men have submitted to the consideration of Parliament. I think you at least know the clause to which I refer. It was for several weeks, perhaps a longer time, impressed upon me much by the amount of criticism that that clause and its promoter were subjected to. It entered my daily thoughts, and was driven almost into my dreams. I mean, sir, that 24th clause—(applause)—which required that the operative should receive such particulars of his work—(hear, hear)—of the material that was given out to him, and of the result that was to be accomplished, so that he should be able to calculate the payment which was to be made to him. (Hear, hear, and applause.) Well, it seemed strange that there should have been any objection made to such a reasonable, such a just enactment. Is it possible to conceive that there is any man who would expect in any transaction of life that he should submit his right and his just demand, not to his own eyesight, not to his own judgment and investigation, but to the judgment, to the decision of the person the other party in the contract which has been made with him. (Applause.) We knew there were employers of labour who always do, and who always are willing, to give such moderate particulars; and although we were confronted with the statement that if particulars were given there would be innumerable frauds upon employers carried into effect; although we were told that the foreigner in the shape of a competitor would invade these shores and carry away everything—(laughter)—we were encouraged in the belief that these demands could never bear any injury to any portion of the trade which is represented by the manufacturer or anyone else, and we went on steadily placing those attacks on one side, until at length the opposition to those clauses very nearly melted away. And I think there were only two members of the House of Commons who ever recorded their vote against that 24th clause. (Applause.) Mr. Chairman, I have a word to say about that clause. It is not enough for us to have placed it upon the Statute Book. It is there, but it may be of very little efficiency and effect if it be not properly looked to and carried out. (Applause.) Sir, if I am answerable for the existence of that clause I may not cease looking if I can to the welfare of my offspring —(applause)—after it has been carried through. (Hear, hear.) It was difficult to anticipate how these operatives could check the particulars they received, and there was a difficulty in seeing that this clause should be properly carried out. There must be some solution of this difficulty. I think it is a solution not to be found by any further legislation, but by the action of the executive to provide machinery, and proper machinery, to see that the clause is not allowed to become a dead letter. (Hear, hear.) How is that action to be brought about? If you tell me that the inspectors ought to see to it I think everyone of them would agree with me that the inspectors at present existing are gentlemen of position and scientific and practical knowledge—(hear, hear)—and gentlemen who desire to properly carry out their duties. (Hear, hear.) There are some of us who desire to remove the difficulties which exist in carrying out that clause. We can not, in justice, allow it to die, and we will use all the influence we possess to bring to the attention of the Government any complaints which arise from the carrying out of this clause. The employés have memorialised the Government, and have personally sent a document for additional inspectors who can fulfil such duties. Mr. Chairman, I am sorry I cannot make an open declaration to you, but I can tell you something to shew that the Government are trying to fulfil their duty in carrying out the clause which Mr. Mawdsley said was such an important one. The bill will be carried out to their fullest anticipation. (Applause.) I have a statement from an important member of the Government who has to deal with this matter, and he says that the Government is determined to appoint additional inspectors to carry out the Act of 1891 in the textile district, and more especially in connection with Clause 24 of that Act. (Applause) They will take care that the person appointed shall be one who thoroughly understands the technical details and whose familiarity with those details will inspire confidence both in employers and employés. Gentlemen, I sincerely trust and I am able to say that before Whitsun tide holidays are concluded, you will have a further and definite announcement to the public as to whom that inspector will be. (Applause.) Now, I hope I have dealt with our legislation and the circumstances under which it was introduced. As to the prospects of the future, I will only say to you and those whom you represent in the operative interests that you have only to ask and to have, under certain conditions. You must ask what is moderate. You must ask what is just. (Hear, hear.) You must ask what is required for the protection of your interests, without inflicting unnecessary injury upon capital. (Hear, hear.) The time has passed for you to consider that employers are your enemies. Capital has had much stress laid upon it. Foreign competition is doing a great deal. Markets under heavy tariffs are being closed against us, and there is necessity for combination of purpose between the employer and the employed. It is the duty of the employers to see to it, as it is yours, before you can be able to get the greatest profits for the joint interest of capital and labour and of the operatives of this country —(applause)—and I am certain of this that there are employers in this country who fully recognise the necessity of meeting all just demands. (Hear, hear.) There are employers in this country who have expressed to me over and over again their sense of the wisdom, the moderation and the justice of the demand that has been displayed by those who are your special representatives in making these demands. If the same spirit that has pervaded the course you have been pursuing in respect to Parliamentary claims during the last few years continues, you may depend upon it that you will be enabled to effect any just reform that you may think you ought to claim, subject to your bearing in mind those conditions to which I have just referred. Mr. Chairman, I spoke of a retrospect that was dark for many a year, and you may think on looking back upon the conditions of the operatives—of those from whom you have sprung—that they were indeed in a terrible and sad condition. It is happy perhaps for you and those you represent, that you and they live in better and in happier times—(hear, hear) —but there are still better times coming to you yet. (Loud cheers.) Your golden age lies in your future, and not in your past. When I speak of a golden age I hope you will not construe my words too literally, and think that I mean that there will be greater payments to the operatives. I mean that there will be a happier and a truer condition of things under which you will carry on your work and under which those whom you represent will labour, and I believe that this partly proceeds from the fact that by the progress of education, by the spread of democratic institutions, you are placed in a truer and stronger position from which to make your demands, and have far greater knowledge and intelligence by which to fashion and moderate them. (Loud cheers.) Mr. Chairman, I said I would not speak much this evening of myself, and you may depend upon it this is too happy an occasion to me to lead me to dwell upon anything like adverse criticism in respect to the course I have taken. But, sir, I did one day look forward to having the opportunity of taking notice of some attacks that were during the course of last spring unsparingly laid upon myself and those who had assisted me. Well, sir, for some months I received a certain periodical: you will correct me if I am wrong, I think it was called *The Textile Mercury*—(laughter)—an article in which I am sure did not emanate from any of those employers with whom I often took counsel, and who appeared to me to be affected by a great desire to do justice. It emanated from sources I know not, but I was told over and over again it was asked "What business has this lawyer to interfere in such a matter as this? (Laughter.) What does he know about textile affairs? How hollow must be his words if he says he is in sympathy with them!" Gentlemen, I only ask those who criticise to recollect that we all of us are human; and we are not to be deprived of our sense of humanity simply because we happen to be lawyers. (Laughter.) I think those critics of mine must share the view of a certain Scotchman, who, being shewn the tomb over which the inscription was written, "A great lawyer and a good man," made the pleasant observation as he passed, "Ah, well, I never thought they could set two bodies in a wee tomb like that" (Laughter.) There were some reasons why I felt entitled if I choose not only to represent my constituents on the subject of this legislation, but also to see if I could not effect some good for my fellow men. As Mr. Holmes said, I would willingly, if I could, turn away from all the contentions and strifes of political party life. My ambitions have long since been satisfied, my hopes have been fulfilled. But is it too much for me now if I choose to devote those years—I will not accept the term "declining years" of my friend—(applause)—to try and effect some good, if I can, by dealing with social rather than political subjects? Why should I be denied the opportunity, why am I to be refused the power, of making such poor efforts as I can command because it is said I have had no practical training in this calling, and because my profession has been of another character? Well, my critic had not been quite true in such respects. When I entered Parliament, now nearly a quarter of a century ago, I at once took in hand subjects which affected the working classes of this country. (Hear, hear.) I always fought against the policy of treating the trades-unionists of this land as being bodies that ought to be hastily dealt with. (Applause.) I said they represent a great power, but their power will be for good if you meet them with the consideration they deserve; their power will be for evil if you endeavour to drive them into hostile ranks (Hear, hear.) Sir, it was a pleasure to me to work by the side of others in endeavouring to alter that law of conspiracy, which not theoretically but practically dealt so hardly upon trade combinations—more hardly than upon any other class in the community. (Hear, hear.) It was a pleasure to me to take a part in framing and passing the Employers' Liability Act of 1880, as it will be a pleasure to me if I am allowed the opportunity of endeavouring to amend that Act. (Cheers) My critic said of me, "What does this man know of working men?" Before I entered my present profession, I was determined to belong to another profession—mechanical engineering. I became a pupil at one of the largest engineering works on the Thames, and in order to learn that profession I had to begin with practical knowledge. I have stood in front of the bench and the vice; I have been before the lathe; I have passed from one shop to another until I reached the draughtsman's office. (Applause.) And although the time of that studentship was comparatively short, I learned some things that have stood me in great stead. I learned a great deal of self-dependence, and have always since preferred to do my own work instead of leaving other people to do it for me. (Hear, hear.) I learned, too, the measure of the working man's mode of thought. I knew where his strength lay; also, if you will permit me to say so, where his weakness lay, too; and I knew that his demands, just as they may be, were not always so fashioned or so made as to obtain the greatest amount of support from those upon whom they were made. I sympathised with those men, and felt that whilst their demands might be just or right, they might not always be able to enforce them or express them. I have throughout my political life taken advantage of such knowledge as has been given to me in later times, and I have brought such poor powers as I have to the work of assisting the labour classes. The recollection of my early life, one incident has brought me closer into sympathy with the textile workers. You have spoken more than once—reference has been made to the great man—the Lord Ashley of former days, the Lord Shaftesbury of later years. He was a man to whom the gratitude of the operative classes I know were given in full measure for the sympathy he got shewn to them. Perhaps if they had known all as it has been disclosed in the late biography, they would have given a fuller measure than they did. (Hear, hear.) He was a man of small means, we learn; he was a man who in his early days sacrificed all ambition, all hope of office offered to him in such measure, in order that his hand might be free to carry out reforms in our factories which he believed from his soul were required. It was my great privilege in the later years of his life to be well acquainted with him, and many is the time that he has

referred to his early days. He has told me of the political period through which he passed, the excitement of party strife, and then referred to the fact that he turned away from office and honour, and gained that which he cherished more than anything — the good opinion of his fellow men, and above all the good opinions of the humblest among you. May I not, by following from a long distance, feel some such pride amongst you, the operatives of the textile industries of England, when with sincerity I believe you have spoken to me offering me your thanks and acknowledgments? I turn to this testimonial, which makes reference to your gratitude, and I feel from such evidence that I have done some little good on behalf of the men who are represented before me. Now, what can I say to you in return? I fall back upon the language of my profession. You have honoured me wish a general retainer to-night. It is the one I shall the most value beyond all others I have ever received. (Loud applause.) I can promise you that I will in the future—as in the past few years I have endeavoured to do my duty to this class that approached me and placed their interests in my hands—I will go on according to my power, believing that there will be rewards greater and more valuable than anything that a Sovereign could bestow or a Minister could give. (Loud applause.) I shall have the proud consciousness of believing that I have been rightly judged according to my wish to serve you, and at any rate do believe that you will have my best and truest wishes for your prosperity; and I know not how better to express myself to you than by telling you the sincere hope of my heart that God may bless you every one. (Prolonged cheers.)

Sir Henry James then resumed his seat, after speaking for three-quarters of an hour.

The usual votes of thanks closed the proceedings.

TEXTILE NUMISMATICS.

Now, while ribbons are so much in evidence, pray how came they to be known by pence in widths? Was it because they were so many pence per yard, or were they recognised as of a width corresponding to the thickness of so many penny pieces? It might be pointed out that the penny was of old time used in several ways as a unit of worth: penny-skein thread was well known in haberdashery; a good pennyworth was a standard of cheapness even in considerable transactions; the pennyweight, which perpetuates the weight of an old silver penny, is still in force. It would be necessary in following up this suggestion to turn to the history of the coinage to find out when the cumbrous copper pence displaced the tiny silver pennies, which, with silver halfpence, three-farthing pieces, three-halfpenny pieces, half-groats, quarter-shillings, and groats, provided our forefathers with small change, when they could get it. Obviously ribbons could not have been guided by the thickness of these diminutive coins, for the 12d. width, which is mentioned by Beaumont and Fletcher, in describing an affected fellow as having—

"Nothing in him but a piece of *Euphues*

And twenty dozen of twelvepenny ribbands,"

would have been no broader than a bootlace, and the 2d. width would have been like twine. The "Household Books of Lord William Howard," so remarkable and entertaining for their copious details of domestic life in the seventeenth century, have been appealed to on this point, and there we find ribbons often bought, entered sometimes as "ribbin," sometimes more fully described as "black broad ribbin," at times shewing who required it, as "xj yards of ribbin for Mrs. Mary," or "2 yards of black ribbening for my Lady," or again denoting the purpose for which it was intended, as "3 yardes of broad ribbin to make my Lady a girdle," or "4 yards of ribbening for my Ladyes wastecoate," or "ribin for show-stringes," and for "ribin and stringing and binding the bouks," when they took tender care of precious books. But in every instance in which quantity and amount are both quoted the price was always of even pence, and when entries occur of "ribins" (in any form save that of ribbons) of 2d. or 6d. rate, just as we should write them now, the sum charged always works out with those for values in the price. Thus "one dozen black 6d. ribbin" stands at "vjs.," and there need not be much further doubt as to the origin of this trade usage.—*Warehouseman and Draper.*

SPINNING COMPANIES IN OLDHAM DISTRICT.

PRESENT POSITION.

In our last week's issue our Oldham correspondent briefly reviewed the position of the spinning companies in the Oldham district. He now furnishes us with the following figures collated from the share lists issued by the Brokers' Associations, from which will be gathered the present position of these concerns:—

PROFIT BALANCES.

	Spindles.		£
Rochdale	70,727	.....	9,573
Astley	84,024	.....	6,516
Arkwright	75,300	.....	6,130
Fern	67,240	.....	5,659
*Mitchell Hey	54,580	.....	5,364
Whiteland's Twist	123,934	.....	5,131
Palm	70,000	.....	† 5,000
Newhey	37,888	.....	4,264
Royton	68,436	.....	4,235
Mutual	83,432	.....	3,874
Albion	86,184	.....	3,716
Crompton	63,600	.....	3,493
Haugh	27,148	.....	3,333
Parkside	49,194	.....	3,195
Green Lane	63,040	.....	3,000
Duke	79,380	.....	2,654
Star	101,388	.....	2,614
Stalybridge	75,420	.....	2,300
Smallbrook	74,052	.....	2,211
Stock Lane	39,420	.....	1,849
Standard	101,508	.....	1,768
Park and Sandy Lane	35,154	.....	1,260
Crawford	169,956	.....	1,159
New Ladyhouse	16,696	.....	1,084
Moss Lane	74,136	.....	858
Dowry	66,760	.....	856
Grimshaw Lane	47,568	.....	847
Peel	67,848	.....	774
Guide Bridge	150,240	.....	613
West End	118,540	.....	597
Beal	96,000	.....	540
Stanley	51,000	.....	408
Prince of Wales	68,500	.....	393
Broadway	68,292	.....	163
Coldhurst	61,300	.....	142
Central	59,808	.....	111
Duchess	73,012	.....	110
Oak	109,362	.....	69
Leesbrook	85,920	.....	55
Westwood	49,504	.....	40
Total	2,981,766	.....	£95,887

* Spinning and manufacturing. † Estimated.

ADVERSE BALANCES.

	Spindles.		£
Shaw	70,000	.....	18,047
Belgian	56,556	.....	15,304
Sun Mill	150,792	.....	11,345
Hathershaw	77,474	.....	9,455
Middleton and Tonge	183,558	.....	9,372
Equitable	78,780	.....	* 9,344
Eagle	86,556	.....	8,231
Gladstone	86,372	.....	7,582
Landsdowne	51,360	.....	7,458
Oldham Twist	133,318	.....	7,395
Empire	110,428	.....	6,727
North Moor	76,596	.....	6,671
New Earth	44,448	.....	6,262
Ridgefield	69,072	.....	6,073
Hope	68,832	.....	5,781
Henshaw-street	60,576	.....	† 5,656
Commercial	62,978	.....	5,616
Hey	29,388	.....	5,556
Borough	65,000	.....	5,549
Thornham	86,522	.....	4,846
Werneth	99,992	.....	4,701
Livingstone	41,130	.....	4,301
Higginshaw	119,342	.....	4,203
Glodwick	79,968	.....	4,185
United	91,548	.....	3,943
Quick Edge	29,870	.....	3,705
Woodstock	73,308	.....	3,530
Shiloh	37,176	.....	3,501
Swan	71,700	.....	3,494
Honeywell	75,618	.....	3,277
Boundary	64,752	.....	3,055
Cambridge	21,960	.....	2,882
Hollinwood	75,024	.....	2,753
Moorfield	72,036	.....	2,574
Mossley	41,000	.....	2,354
Moss	75,000	.....	2,190
Clough	47,654	.....	2,178
New York	74,500	.....	2,165
Lees Union	68,400	.....	2,076
Albert (Oldham)	22,262	.....	2,003
Olive	79,640	.....	1,913
Butler Green	93,396	.....	1,901
Grosvenor	11,118	.....	1,763
Windsor	37,668	.....	1,240
Melbourne	79,320	.....	1,112
Greenacres	114,034	.....	1,093
Longfield	20,760	.....	847
Cavendish	72,360	.....	808
Albany	63,976	.....	460
Lower Moor	9,852	.....	374
Total	2,479,186		£237,661

* £2,393 Preference Share Interest owing.
† £1,555 " " "

From the above table it will be seen that forty spinning companies have profit balances to their credit amounting to £95,887, as against fifty companies with balance losses of £237,661. The profits are equal to 7½d. per spindle, or £2,397 3s. 6d. per company, while the losses stand at 1s. 4¼d. per spindle, or £4,753 4s. 4¾d per company, being twice as much as the former. And the worst of the position is that the losses are likely to be increased and the profits reduced before the annual balances at the year end take place. The largest reserve is held by the Rochdale Spinning Company, and the highest adverse balance by the Shaw Spinning Company, which last Saturday announced a loss of £11,321 on the three months' trade, but, of course, it could not be incurred in that time, it being understood that the loss has resulted on the realisation of "futures." This year, so far, bids to outstrip any of its predecessors as far as regards loss. In 1890, 91 companies made profits amounting to £384 000, which placed them in a very good position indeed—in fact, the best they had occupied for a number of years. But what they had gained by speculation and careful trading they have since more than lost. Last year 101 companies only earned £38,758, which was the beginning of the down-grade movement. Since 1884 the worst year was 1886, when the losses shewn by 90 companies were £61,718. This year, however, is expected to top that by a good amount. Still, as these concerns have pulled through previous depressions, so Oldham people believe they will do so again on this occasion.

TEXTILE PATTERNS AND DESIGNING.

A lecture on the History and Development of Textile Patterns up to the end of the Eighteenth Century, by Mr. Paul Schulze, Conservator of the Royal Textile Museum and Lecturer on design at the Royal Weaving School at Crefeld, Rhenish Prussia, was recently delivered at the Nicholson Institution, Leek, and also in the Mayor's Parlour, at the Town Hall, Manchester, before crowded and highly appreciative audiences. It was illustrated by numerous and important examples of textile fabrics and designs from South Kensington Museum and other sources, and also by lantern slides.

The Lecturer said: Of late years the attention directed to matters appertaining to Art and Industry has been largely bestowed upon that branch of Industry which more particularly provides for the comfort and adornment of the human body, and which has also contributed in no slight degree to the prosperity of many towns and countries. I mean Textile Industry.

Since the time when we began to make use of the old patterns left to us by bye-gone generations, in many places collections have been compiled of the most important examples of early Textile Industry, comprising materials from the earliest times: woven stuffs, needlework, etc., which offer to manufacturers and designers an inexhaustible mine of suggestions and motives for their compositions

It is not my purpose to read a lecture upon the history and development of Art and Industry; my particular object is to give a very general summary of the evolution of Textile design from the earliest times, and to shew how many interesting details can be supplied by such an apparently insignificant subject as that of woven designs. The expression generally applied by people to these fragments of ancient materials is "old rags."

With regard to the period at which our investigations should commence, it might be considered that the art of usefully applying such perishable materials as the fragments of flax, the wool of sheep, and the fine thread spun by the silk-worm, dates from no very distant time; but this is a great mistake.

We should be wrong in dating the birth of the Textile Industry at that time when our forefathers lay on their bear skins on either side of the Rhine, that is to say, at the commencement of the Christian Era. We should be equally in error if we placed this period merely 1,000 years back, to the time when Greek Art was not yet spoken of, much less European culture. We can with confidence go back still 3,000 years, that is, in all, 6,000 years from the present time. Monuments of this early period prove to us that even then there was a culture in ancient Egypt which did not exclude the existence of a Textile Industry; on the contrary, its existence may be proved with almost certainty. About the year 4,000 B.C., King Mena is said to have reigned over Egypt. He was accused by his successor of having enervated his people by excessive luxury. He was cursed by the priests (who also may be taken as a token of civilisation) and this curse was engraved upon a square stone. The author "Ebers" informs us how King Teta's mother occupied herself with the study of physic and concocted a lotion to make the hair grow. Now I think I may fairly conclude that a race of people who were in need of some means to make the hair grow more freely than in the natural condition, would not have neglected the protection and adornment of the other parts of the body; hence the existence of textile industry may easily be inferred.

No remains of stuffs from this period are extant, but the paintings in the Pyramids shew the Egyptians dressed in gowns striped with the primary colours, blue, red, and yellow. Besides this, little designs have been found, which are evidently reproductions of woven patterns. There are little drawings of geometrical construction, repetitions of the figure 8, combinations of lotus flowers, etc. There are also other motives in the designs, from which we may conclude that they were applied to clerical vestures.

In a series of centuries we find that forms of certain animals, plants, etc., which we deem sacred to religious service were used symbolically for the designs for clerical vestments and antipendiums. Hence it is probable that the Egyptians likewise used the forms of their holy animals and plants. This was particularly the case with the Assyrians, and the paintings of this race were very much like those of the Egyptians. I

might, therefore, name some of the principal types which form the bases of Egyptian ornament, rich and varied as it is; ornament which is found as well on the temples of their Gods, and on the palaces of their Kings, as on the simplest articles of use. First, there are the buds and flowers of the lotus and payrus plants, which were the symbol of the nourishment of the body and mind; then there is the dung beetle or "scarabeus." This insect, of a bright blue colour, has the remarkable habit of laying his eggs into excrement with which it envelopes the egg, forming a little ball The beetle draws this ball after it with its hind legs until the surface hardens. The ball, containing the embryo of a new life, which the heat of the sun will awaken, was to the Egyptians symbolical of the globe out of which new life is likewise for ever developing, and of the minuteness of the Creator's work. The ancient Egyptians being sun worshippers, their most sacred figure was the disc of the sun, mounting the sky on eagle wings. The Urans serpent was the symbol of sovereignty commanding over life and death, since the bite of this creature meant instant death. Besides these many animals were sacred. The bull, for instance, named Apis, which was the symbol of the God Osiris. The annual feast of Apis had reference to the annual inundation of the Nile. Cats, numerous mummied specimens of which have been found in the tombs, were holy, and anybody who killed a cat was drowned.

Another ancient state possessing culture was that of Assyria. The territory between the great rivers Euphrates and Tigris was in early times the home of extensive industrial art. The Bible mentions the magnificence of old Babylon. Its circumference is said to have been about 40—45 miles. The mythical tower of Babel and the hanging gardens of Semiramis acquaint us of the fact of extensive buildings in those times.

In the ruins of great Assyrian buildings were found plates made of alabaster, which were used for covering the walls. The prowess of the Kings was chiselled into these plates, being represented figuratively and with great vigour. They give us plenty of clues to a textile industry: thus we are able to ascertain perfectly well the manner in which the Assyrians made patterns for dresses, carpets, and antipendiums. On these plates the Assyrians are represented as being dressed in long loose gowns with fringes, and embroidered to represent beasts fighting, fantastic forms of animals, bodies of lions with human heads and wings, human bodies with wings and birds' heads.

Amongst these we see borders with stars, strings of roses, zig-zag lines, winding curves, "Meandrian" lines, palmettos, and here also the disc of the sun with wings, the symbol of Assyrian sun-worship. A very characteristic ornament was the Holy Tree, the tree of life, which bears fruit like pomegranates

The pomegranate plays a large part in the symbolism of many religions as well as in the Christian religion In ancient times it was the symbol of love. Jupiter makes the bridal Juno taste of the pomegranate. Leah wanted to buy the love of Jacob, who loved Rachel better than her, with love-apples, the smell of which animates love. Pluto obtained power over Persephone when she had eaten of the pomegranate. And lastly the apple was the symbol of the generative power of nature, and was the forbidden fruit of Paradise.

The Bible makes mention of weavings of an Assyrian character. Moses says of the makers of the ten large tapestries of the tabernacle, which were ornamented with Cherubim, "Them hath God filled with wisdom of heart to work all manner of work of the engraver and of the cunning workman and of the embroiderer in blue and in purple and in fine linen and of the weaver." XXXV Exodus, v. 35.

About the official dress made for Aaron, Moses says, "And they did beat the gold into thin plates, and cut it into wires, to work it in the blue, and in the purple, and in the scarlet, and in the fine linen with cunning work. And they made upon the hems of the robe pomegranates of blue and purple and scarlet and twined linen." XXXIX. Exodus, v. 3 and 24.

A drawing shews us a piece of the dress of an Assyrian King when sitting upon his throne. In the circles surrounded with palmettos and pomegranates, the tree of life is seen standing, above which is the disc of the sun with eagle wings. The figures are kings and priests, and those with wings are cherubim with human and eagle heads. The lions with wings probably represent subordinate gods The narrow borders are ornamented with pomegranates and roses.

The repeated use of pomegranates and cherubim on the materials for the tabernacle authorises us to conclude that the weavers of them learned their knowledge in the colleges for the priests at Ninevah.

A third great state of ancient culture in the far East of Asia is China. This Empire has an important connection with the Textile Industry, being the native country of the most precious material for weaving, that is, silk. In the year 2698 B.C., the consort of King Hoangti, named Louitsen, is said to have invented the rearing of silk-worms and the weaving of their threads. The strict custom of destroying with fire the dresses of the dead accounts for the fact that few or no remnants of old Chinese textile productions are preserved Notwithstanding this we are able to draw conclusions from modern drawings, as to those of times long gone by.

A great characteristic of the Chinese is their adherence to ancient customs and a surprising power of resistance to foreign influences. In consequence of this characteristic, the civilization of the Chinese Empire, no wise inferior to that of Egypt considering its age, was able to preserve its originality for more than 5,000 years. Even at the present time a few laws and state regulations are in existence which are said to have been originated by the half-mythical Emperor Tutri, who lived in the year 3460, and who is believed to have invented the Chinese alphabet. The Chinese have developed this conservative characteristic; in all conditions of life they have remained true to their forms of Art. With regard to Art, the Chinese are neither progressing nor falling back. Their designs, which are geometrically composed, are most effective. They have no talent for a symmetrical distribution of forms on a flat surface. But this is atoned for by their instinctive appreciation of harmony in colour, which is peculiar to all Eastern nations. They employ objects of all possible kinds, such as clouds, the waves of the sea, groups of rocks, shells, vases, etc., and all the flora. The lotus flower of the Egyptians is often used; as is also the peony, the symbol of the sky and the earth, deriving from the former perfume, and from the latter brilliancy.

The Chinese have also a great variety of geometrical and line designs among which the "Meandrian" again occurs.

We also find a number of fantastically shaped animals, of which the dragon is a frequent figure, a marvellous creature with the head of a Chameleon, the horns of a stag, the claws of an eagle, and the tail of a serpent. This dragon is the symbol of supreme wisdom. Its empire is all space above the mountain tops among the clouds and also in the underground depths, in the air and in the water. The dragon is the martial device of the Emperor and of the senior princes, possessing in this case five toes The dragon of the junior princes, not being so important, has four toes, and that of the Mandarins only three. The device of the Empress is the Phœnix, a bird with a peacock's tail, and a head covered with protuberances. It symbolises a long and happy life.

The Chinese horse or "Khilin" has the body of a stag, the horns and tail of an ox, and horse's hoofs. This marvellous creature appears in Assyrian Art as an unicorn, and it may be traced up to the 13th and 14th centuries. Lastly may be mentioned the Chinese lion or dog named Fo. All these fabulous animals, together with specimens of the vegetable kingdom and some very elaborate line compositions, form the elements of the extraordinary designs which the Chinese make use of in the decoration of their stuffs.

After considering the Textile industry of the three oldest civilised nations in Asia and Africa, we turn to Europe, and give our attention to the nation which laid the foundation of European culture, that is, the Greek nation. We shall surely find it of interest to learn what industrial productions were the result of a genius which was able to produce buildings and sculpture of such classic beauty that they are even now models for modern works of Art. The excavations near Hissarlik prove that the oldest Greek decorations were composed of the simplest line drawings, imitations of branches, shells, birds, fishes and quadrupeds. The remainder of the old Grecian ware was decorated with winding curves, zigzags, strings of pearl, and lastly the 'Meandrian." This ornament seems to be a natural instinct in the human race.

Until 1879 we are only able to draw conclusions as to the designs on Grecian stuffs from the decoration of old buildings and old potsherds.

Grecian authors give a good deal of information upon the designs on weavings. Excavations made in South Russia have confirmed the supposition that no branch of industry or art has its own decorations, but that the dominant style belongs to them all.

Amongst the articles found in the tombs, detailed and illustrated in the *Compte-rendue de la commission Archeologique à St. Petersbourg*, in the year 1881, there were a number of fabrics. Their age is denoted positively by inscriptions. One of the weavings belonged to a woman of the 4th century B.C. They are for the most part made of wool, coloured violet, and embroidered with white, yellow, red, green, and black threads to represent an Amazon on horseback, with a greenish "Chiton" waving a spear in her right hand. Another part of the same dress shews yellow plants with flowers formed like chalices and green fruit.

From the tomb of a warrior buried at the same period, a great cover, which was laid over the sarcophagus, was taken.

The cover is about four yards square. It is composed of three strips of material woven from wool and sewn together lengthwise and painted with ornaments and figures. The figures are formed by the colour of the material, the spaces between them being painted black. The stripes were painted with alternate mythological scenes and ornament. This cover proved to be a Greek production, from the numerous inscriptions upon it in the Grecian language. The name "Jocatta" shews that scenes from the legend of Aedipus were being represented. The names "Phaidra" and "Eulimene," close by two women in violent motion, point to the wrestling combat of "Peteus" with "Thetis" The Goddess Athene armed with the protective Aegis, and a victor returning from a chariot race, are also depicted on this cover. Another little piece of woollen material, almost transparent, was found in a tomb dating five centuries B.C. It is decorated with zig-zags and points, large crosses, "Meandrian" lines, and similar motives. In the same tomb which contained the large cover was also found a piece of woollen material, which was extraordinarily thin. One side of the fabric is bound with satin and the other with reps. This piece of stuff proves the great perfection of the Grecian textile industry. The patterns are woven upon a cherry-brown coloured ground in tapestry style. The design represents a series of five ducks with raised wings and heads, alternately turned to right and left. A beautiful dark green, whose brightness is very well preserved, is seen on the heads and necks.

Other different fragments were found in the same place: for instance, a piece of gold thread embroidery representing garlands of flowers and ivy leaves; also a piece of whitish woollen material with a surface similar to that of modern velvet; and lastly a small remnant of yellow-coloured silk stuff with a lozenge-shaped design.

As these preserved fragments of the ancient Greek weavers' craft are of the greatest value to enquirers, so numerous literary references convince us of the cleverness of the Greek figure-weavers. Their productions were worthy of a place by the side of their other artistic productions, being of a high degree of merit.

It is impossible to quote all the relative passages, but it may be sufficient to mention one of them (see F. Fishback "Geschichte der Textil Kunst"). Ovid in his metamorphosis of Arachne says: "It was a p'easure to observe Arachne winding the wool and curling and twisting it into fine thread. She contended with Pallas Athene in a trial of their skill in weaving. Each put her loom in a separate place and stretched the fine threads thereon. The combatants hasten to their work, having first girded their robes about their bosoms. They ply their deft hands, and their facile brains encourage the work. Pallas weaves the castle of the Cecrops standing on the rock of Mars and of the quarrel concerning the name of the country." Twelve immortals are seated on their thrones in austere solemnity with Jupiter in their midst. The individuality of each God is delineated and Jupiter is rendered in regal splendour. Neptune, the sea-god, alone is standing, and with his trident he strikes the unhewn rock, from which the salt-water gushes forth. Pallas Athene is shewn furnished with the defending Aegis and having on her head a helmet and in her hand a pointed lance. At the place where the lance has pierced the ground a green olive tree bearing berries is sprouting. The work is surrounded by a garland. The gods look at it with astonishment.

But Arachne wove the story of Europa carried away by the Bull. The latter seems to be really living and the sea to be heaving. In addition Arachne wove Asteria seized by the flying eagle, the loves of Leda and the Swan, and of Antiope and the false Satyr. She wove the scenes of Jupiter as Amphitrion wooing Alkmene; Mnemosine's seduction by Jupiter in the guise of a herdsman; Aegina and Jupiter in the fire; and lastly Danae tempted by gold and Proserpine by a Dragon. An ivy garland went round the border with flowers interwoven. The nymphs said about the woven work of art neither Pallas nor a jealous mind could find fault with the work; Arachne's fertile skill brought her to Athene's level, but the latter's work was inspired by a nobler mind.

This tale informs us of two grand figure drawings, which can compete with the best productions of the French and Flemish looms. Ovid reports, moreover, that Pallas Athene was not pleased with Arachne's work; on the contrary she punished her by changing her into a spider, ugly indeed, but a skilful weaver. This was Arachne's punishment for having had the temerity to remind the daughter of the father's amorous adventures.

The following quotation taken from the Odyssey also gives a very clear image of the Grecian woven designs. Ulysses describes to Penelope the dress he wore on his departure to Troy: "The dress of the noble Ulysses was of a purple colour and rough in texture, with flashing embroidered front. A spotted doe is struggling under the fore-legs of a savage-looking dog. The astonishment of all beholders was excited by the manner in which the dog woven in gold was strangling the doe while glaring at it most ferociously, the latter meanwhile endeavouring to regain its freedom."

This embroidery is very interesting because we find among the stuffs of the 13th century a very similar design. Here also we have a beast with a ferocious

stare, which has seized a doe endeavouring to escape with its fore-legs.

We know how the Greeks used the forms of Art belonging to other countries and nations both contemporaneous with and prior to them, and influenced these forms by their own genius. We may suppose the same to have been the case with the Romans. The whole development of Art is said to be inherited and borrowed Hellenism, with traces of Asiatic influences. The Greeks and Romans had similar technical principles and methods in dress, in pottery, and in metal-work. The interior arrangements of their houses and apartments were at first the same, as well as their principal forms of architecture and artistic symbols. For this reason it is very difficult at present to decide whether Roman motives being also Grecian have an old common origin, or whether they were imported from Hellas. As there are no remains of stuffs from the Roman period before Christ, we are forced to conjecture merely. We are led to suppose there was great congruity between Greek and Roman Textile motives. Just as on the Grecian materials of the 5th and 4th centuries B.C. stripes, Meandrian lines, zig-zags, etc., were used, so on the Roman materials the same ornaments will have been employed.

What weavings of Roman origin have been preserved, date from the time of the Roman Emperors. A very rare little piece of silk, perhaps belonging to the time before Christ is preserved in the Church of Valeria in Sitten, Switzerland. This curious piece of silk is twilled; its groundwork is green and the design yellowish brown.

The design shews a female figure sitting on the back of a dolphin and under the latter an Acanthus stalk. The figure is holding in her right hand what is probably either a veil or a fruit basket. It is a great pity that the pattern is not complete.

This piece of silk from Sitten, the Grecian fragments already mentioned as being found in Southern Russia, and perhaps two or three other little remnants in various museums, are probably the only known remains of textile products of the time before Christ. There are no fabrics extant which can with certainty be attributed to the first three centuries of the Christian era.

To arrive at the place where probably the oldest weavings of this era were produced, we must again return to the country which has shewn itself so well able to preserve the treasures entrusted to it, I mean Egypt. In Sakkarah and Alkmun, in Upper Egypt, large cemeteries have been discovered in recent years. The dead bodies contained in them were not enveloped in strips of linen, as were the old Egyptian mummies, but were dressed in the garments they had worn when alive.

We repeatedly found remnants of repaired and patched garments, even children's dresses shortened by a hem, intended to be let out with increased growth. We obtain a complete picture of the costume of this period—the long tunic reaching to the ground, the stole, wide sleeves, and the short tunic reaching only to the knees.

But we are more interested in learning the method of making the garments than in the style of wearing them. There was a coarse thick woollen material which they used not only for their winter clothing but also when steeped in water for cooling the wine vessels in summer; they had also a kind of wool-rep, a compact twilled woollen material with Meandrian drawings and a woven broad purple stripe; woollen cloth evidently woven over rods, looking like velvet with an uncut pile; plain linen and cotton fabrics woven on one side in the manner of the material used for bathing towels; fabrics of mixed linen, cotton, and wool, with silk, patterned with little damask drawings, all these fabrics being brought to the light of day after almost 1,500 years hiding in the dry sandy soil. But our greatest interest will be excited by the woven stripes used for the decoration of garments and by the round and square pieces of cloth which were the signs of rank. By examining them we are able to imagine how the grand figure pieces, so vividly described by Ovid, were woven. These decorative articles were woven in tapestry style, with many coloured threads of wool. Some of the colours are still remarkably brilliant. There are ornamental and figure pieces in great variety; the designs shewing partly classical influence and partly forms of a very simple character, bull-fighters, slingers, bowmen, and spear-throwers with shields, pairs of horsemen with lances, and hunting lions and leopards, besides winged angels, and a variety of animals such as wild goats, hares, birds, etc.; and lastly baskets of fruits and roses surrounded and interlaced with twigs, are frequently given with surprising skill.

It is quite impossible to give in description only, an adequate idea of the rich conceptions which have been preserved from such an early period. Not only were woven fabrics and linen found in excavating these tombs, but also silk materials with similar but more refined designs.

We find little designs not larger than the size of a pea, composed of little lozenges, hearts, and clubs; large square designs in which card signs again appear; also large ornamental circles with horsemen in their centres similar to designs on Persian fabrics mentioned later on. At present it is hardly possible to say positively whether these fabrics were manufactured in Persia or whether they were woven in Alexandria, Antioch, or Byzantium, where, at the time we are dealing with, Textile Industry flourished. Similarly we are not yet able at present to determine the age of the fabrics found in the tombs of the Coptic Christians in Upper Egypt. At all events we have reason for supposing them to be some of the oldest preserved weaving products of the Christian Era, belonging to the time between the 3rd or 4th century or the 8th.

Now we will consider the Persian woven designs already mentioned.

At the time when the Rome was losing more and more of its independence owing to the enervating results of its social life and the lassitude of its rulers, and when from these causes the Roman Government was hastening to its ruin, the Persian Empire in Asia was building up a new civilization upon the ruins of a culture then long gone by. In the year 226 A.D., Artaxerxes I. took in hand the Government of all central Asia; he founded the family of the Sassanides, who reigned in Persia until 426 A.D. The greatest prince of Persia was Khosrev Anushrev, 531-579. During his reign, commerce, industry, and weaving of a high character flourished. Some original fabrics, kept till the present day, as coverings for relics, prove the great perfection of this Persian Textile Industry. Their fantastically conceived and elaborate designs, the evenness of their texture as well as of the material itself, the fact that the fabrics are woven partly with five colours, may well astonish the weavers of our own time.

You should handle these original fabrics, which have seen almost 1,500 years, and you will respect the weavers of this remote time, who had no looms and no appliances such as in our present perfection. The connoisseur feels compelled to put the question, "Have the textile productions of our own time, compared with these venerable fabrics, improved in the same degree as our modern machinery has surpassed the primitive appliances of the earlier centuries?" The reply will be in the negative. We are able to produce more quickly, but we are not able to produce much better. Now let us analyse the designs upon the Sassanide weavings. We mostly find large circles standing in rows one upon the other. The points of contact are covered with roses, smaller circles and polygons. This is a very characteristic design, and one which occurs in Persian and Byzantian fabrics of the 4th up to the 12th and 13th centuries.

In the church of St. Servatius in Maestricht there is exhibited a small collection of fabrics of the middle ages. Amongst them is a very brilliant specimen of Persian weaving skill. Large circles stand one upon the other, and by the side of each other, as already described. In the spaces between them floral ornaments are drawn in a very graceful manner. The broad circle, also decorated florally, incloses two Persian Kings hunting lions on horseback. Hunting scenes very often appear on Eastern fabrics, because the Orientals are great sportsmen, and we shall see similar scenes until the end of the middle ages. The riders and huntsmen are not always arranged in circles; we also see men on horseback, sometimes with wings, placed in rows without circles, or in squares or polygons; great lions gravely stepping in order one after the other, or two of them facing one another. Very interesting examples of Sassanide fabrics† are preserved in the treasuries of the Churches on the banks of the Rhine and in Aix-la-Chapelle, in several museums, such as the South Kensington Museum in London, and particularly in the Museum for Industrial Art, at Berlin.

We now return from the Persian land of wonders to European ground, and consider the silk weaving of Byzantium.

This new capital, which, since the time of Constantine the Great, took the place of ancient Rome, endeavoured to emulate the old city in all matters appertaining to Art. In Byzantium the artistic capabilities of the old world were concentrated, here the flickering spark of art was fanned to set ablaze later on a new art life; whilst in the western countries, owing to the violent disturbances attending the migrations of tribes, the influences of art were decaying more and more.

In the beginning of its development Byzantium or early Christian Art was a hybrid bearing of the influences of the Western Nation, which ruled over Byzantium, and of the Asiatic races subjugated by the Romans.

With the government of the Emperor Justinian (527—565) a new epoch was inaugurated and an independent creation of a new style.

The Byzantian style flourished up to the early part of the 13th century (1204). At this period the decline of this splendid and pompous style commenced, but the inhabitants of the Eastern Roman Empire continued under its influence until the time when the Turks began to conquer this once mighty Empire.

†This is the technical term for these Persian materials.

Nevertheless, at the present time we can find traces of the influence of the Byzantian style amongst the Russians and Greeks.

The government of the Emperor Justinian was the prominent feature of the Byzantian Empire as well as in Art as in history. Justinian, not without reason, has been compared with Louis XIV. Both shewed the same activity and capability, both were animated by the same bigotry, both were under the influence of petticoat government, and in the states of both sovereigns ambition for military glory and a great love of pomp, nourished by taxes, produced the same results. Justinian employed all the financial schemes of modern politics to swell the public revenues, such as every description of tolls, duties on eatables, state monopolies, etc. Of the latter, the monopoly of manufacturing splendid silk goods is particularly remarkable. The rearing of the silk-worm in Europe cannot be traced back earlier than the reign of Justinian; before this time the silk was imported from India and China, in which countries its production was guarded as a great secret, and the export of the eggs of the moth was attended with severe penalties.

The legend runs that two monks conveyed in their hollowed pilgrim-staves, some eggs of the silk moth and seed of the mulberry tree, so important for its nourishment, when returning from a pilgrimage from the distant China in 555.

These were the germs from which an industry was to be evolved, and to which Europe owes a large part of its present opulence.

Justinian was able to appreciate the great importance of silk weaving and the silk industry. He is credited by an ancient author with the fame of having imported, with the cultivation of the mulberry tree, a branch of industry more important and more far-reaching than his conquests, or than the laws he compiled.

He brought into his own manufactories silk weavers from those countries which were distinguished by their textile skill, or which were in competition with him. We have seen how the Persian Kings of the family of the Sassanides established silk manufactories in the same manner as Justinian. They paid great attention to the silk trade, rightly valuing their favourable geographical situation, which placed them midway between the Orient and the Occident. For this reason Justinian engaged first-rate Persian weavers for his Imperial factories.

It followed as a matter of course that these weavers did not immediately resign their own tastes, and thus we find, especially in the earlier part of this period, great congenuity between the Byzantian and Persian drawings. Of course there was a reciprocal movement in this matter, because the Persian Kings will also have made use of the excellence of the Byzantian Textile Industry at that time by engaging weavers from the city.

There is an additional factor in this congenuity between the Persian and Byzantian woven designs: the latter also shews us figured pieces surrounded by large circles. In the Treasury of the Church at Maestricht there is kept a piece of stuff which belonged to the garment of Saint Servatius, the patron of this church in which he was buried. The figured part of this design is surrounded by connected circles having a diameter of a quarter of a yard.

The ornamental filling of these circumferences of these circles is composed of calyxes in classical drawing. Within the circle two brothers stand upon a doric column—perhaps Romulus and Remus, or the two Dioscurii, Castor and Pollux. On each side of the column a bull is being sacrificed. Two angels pour out the Libation. According to Dr. F. Bock, the praiseworthy investigator and collector in the Textile sphere, this fabric is the only piece of silk which gives a representation of a heathen sacrifice of animals. The technical detail is remarkable. We observe four colours in the woof; the ground is dark crimson; the outlines of the floral ornament and of the figures are covered with dark violet purple. The carnation and some parts of the garment are woven in a yellowish white silk, and lastly green is employed on the gods' upper garments and for the floral ornament. We can assign the manufacture of this very interesting fabric to the fourth century after Christ, and it is quite possible that the material was indeed part of the dress of Saint Servatius, judging not only from the design, which is characteristic of the period, but rather from other reasons, such as the tradition attached to this rare piece of silk and its discovery and preservation. A powerful argument is furnished by the great resemblance of the ornament in the circumference of the circle with the ornament similarly placed, which appears on a piece of silk found in a Coptic tomb in Egypt. The design is undoubtedly the same, and as Coptic fabrics have been found with Papyrus documents, which are dated from the 4th century, there is no reason to believe that this material, attributed to Saint Servatius, did not belong to that saint, the more so as Saint Servatius went on a crusade from Asia Minor to the north of Germany, Belgium, and Holland.

Another celebrated fabric is preserved amongst

the treasures of the Aix-la-Chapelle Cathedral. Here also we see large connected circles, with diameters of over half a yard. The figured centre, a team of four horses, is sure to relate to the chariot races, which were so popular at the time of Justinian that the two great political parties of Byzantian used to wear the colours of the charioteers Hence the name of the parties, blue and green. The ground colour of this fabric is violet blue, and the colour of the design yellowish brown. A scene very often represented in designs of the 7th and 8th centuries is that of a man fighting with a lion. We see this incident enclosed in circles and also in continuous repetition. This subject has been interpreted in different ways It may be the fight of Hercules with the Nemean lion, or Samson strangling the lion, or Daniel in the lions' den, or, finally, the struggle of Christian martyrs with wild beasts in the Royal Amphitheatre. However, there is no absolute necessity to interpret all these scenes, the results of the fancies of Roman and Oriental designers. It is much more probable that these artists composed their pieces as do our own contemporaries, without considering that at some future time sagacious interpreters would give a deeper explanation of their unpretending compositions. Besides these fabrics bearing the large designs already referred to, several remnants of materials are preserved which shew smaller patterns of geometrical construction. There are pieces of small octagons, roses and little crosses and such like.

We also find these little patterns in the portraits of the Byzantian Emperors, preserved in the Churches of Ravenna and Constantinople underneath the colour which Turkish orthodoxy has daubed over their pictures. In the church of St. Vitale in Ravenna there is a great piece of Mosaic representing the solemn going to church of the Emperor Justinian and his Queen Consort, the ill-famed Theodora. They are followed by their suite of spiritual and temporal dignitaries with the body guard, etc. All the men are dressed in splendid garments with many folds. The fabrics of the latter bear a variety of the little patterns referred to a little while ago, when describing the small Coptic design.

The quarrels of the image worshippers and image breakers in the 8th century perhaps had their influence upon figured Textile designs; even Art was outlawed, being considered an accomplice of idolatry, but this is a matter I leave to others.

Dr. F. Bock, who studied the literature of the ancient authors, as well as the works of the Monk and Librarian Anastasius of Rome, 886, gives in his book the quotations which explain the designs upon the surplices and fabrics presented to the Churches of Rome and Italy before the 10th century. In volume I. of Dr. F. Bock's work: "The Liturgii Vestments of the Middle Ages," we read as follows:—"If we peruse the biographies of the Roman popes we find that in the designs for ecclesiastical pieces, antependiums, etc., of which Anastasius gives a very detailed description, nearly all the important incidents of our Saviour's life were rendered in woven designs for the purpose of edifying the believers." The era pictorially treated of in these gorgeous fabrics begins with the commencement of the work of the redemption, that is the Annunciation. All these figured pieces are woven in gold thread and enclosed in circles. The Annunciation is often mentioned by Anastasius; for instance on an Altar Cloth presented by Pope Leo III. to two Churches of Rome in the 8th century. On another fabric, no less gorgeous, the birth of our Saviour appears. On an antependium the murder of the Innocents at Bethlehem is depicted.

The following scenes from our Saviour's boyhood were woven: Jesus Christ preaching in the temple at the age of 12 years, surrounded by the scribes; the Baptism of our Saviour in the River Jordan; the changing of the water into wine; the miracle of the five loaves and the two fishes; and the entrance into Jerusalem, etc.

But Christ's Passion in particular gave many a subject to the Greek weavers and embroiderers. The important events in the life of the Holy Virgin were also often made use of in these arts; they were the favourite subjects of artists through all the middle ages. We can trace these figured woven designs up to the 16th century, from which period some very beautiful illustrations of scenes from the New Testament have been preserved. The employment of this kind of work for secular uses did not, as a rule, meet with approval. Thus in the 4th century we find Bishop Asterius of Amasia in Asia Minor complaining of the luxury of the Christians in the matter of dress. He said that they walked about like painted shows. Many people were dressed in apparel illustrating the miracles of Jesus Christ without bearing these things in their hearts. Others had their clothes ornamented with lions, bears, rocks, and hunters, so that little children used to point at them with their fingers. Unfortunately no specimens of the splendid fabrics described by Anastasius have been preserved to the present day. Dr. F. Bock states that in the Church of St Benedictus at Monte Casino, in Italy, five marks on the floor shew the spot where the French made a bonfire of the gorgeous and expensive surplices which had been presented to this old abbey by Byzantian Emperors and Ecclesiastical Princes. It is not improbable that in this instance Gallic ignorance destroyed some of the magnificent Pontifical robes above referred to for the mere sake of the little gold which was contained in the gold thread woven into the fabrics.

It is not possible to describe here all the woven pieces made under the influence of Byzantian Art and mentioned by ancient authors or preserved until the present time. It may be stated that most of the designs were composed of animals facing one another, drawn very elaborately and surrounded by graceful floral ornament. All possible varieties of animals were made use of. The rare fragments of pieces dating from this period correspond in many cases with the fabrics of the time described by Anastasius.

According to the opinion of Dr. F. Bock, in the Middle Ages the chasubles were not distinguished, as at the present day, by different colours, as ordained by the Church, but by the designs they bore. In old inventories we find "the chasuble with lions," "the chasuble with elephants," "the eagle dress," "the dress with the peacocks," etc.

Another object made use of frequently at this period was the griffin. This fabulous animal occurs also in the traditions of Ancient Persia as well as at the end of the Middle Ages. The griffin is represented as having the body, tail, and hind legs of a lion, with forelegs, head, and wings of an eagle. According to Anastasius, not only the animals we have mentioned were used in ornamenting the surplices, antependiums, etc., he describes, but also birds, unicorns, trees, shrubs, and other forms of the animal and vegetable kingdoms were woven and embroidered in various ways upon the fabrics of that age.

Remains have been preserved of another class of silk goods, which, while differing from these fabrics in their historical origin, have their interest from a technical point of view. Owing to the method employed in binding the warp and the woof, the finely drawn designs, composed only of outlines, merely appear as though engraved upon the shiny satin surface. It is very probable that these fabrics are also examples of Byzantian textile Art. The period at which they were produced is determined by the places where they were discovered, and by the traditions attached to them. Thus in the Church of Mayence there is preserved a chasuble which belonged to St. Willigis. The substantial silk material is of a green colour with a golden glitter upon its surface. In the Cathedral of Xanten near the lower Rhine a yellow chasuble of St. Bernard is shewn. In the Royal Museum of Industrial Art in Berlin and in the Royal Textile Collection at Crefeld are exhibited pieces of the garment in which Emperor Otto I. (936-973) was buried. This last example assigns this class of fabrics to the 10th and 11th centuries.

The dyeing of the materials forms a very interesting part of the examination of the Byzantian textile manufacture. Without entering into detail, it may be shortly stated that purple was the most valued colour of the middle ages. It comprised six to eight shades of colour, from the darkest violet to a clear red violet. The Imperial purple possessed a deep dark hue, like that of the violet. In the times of the Roman Emperors the real purple from the Murex Shellfish was worth its weight in gold. The use of this colour was confined exclusively to the Imperial Court and the Church. The purple of Alexandria and Tyre was famous in the earliest times.

(To be continued.)

NATIVE TEXTILE INDUSTRIES IN JAPAN.

A report has been issued from the Foreign Office which has been drawn up from information received from her Majesty's Consuls in Japan, who, at the request of the British Minister in Tokio, instituted enquiries into the various native industrial enterprises that have sprung up in late years, many of which have been worked with a certain degree of success. In the case of some of these industries Japan is now self-supporting, foreign competition being no longer possible. In others so much has been accomplished as to render it certain that the time is not far off when importation will altogether cease. The future of other industries, especially cotton spinning, is hopeful, the country possessing a constant advantage in the great cheapness of labour. The need of foreign co-operation in the shape of capital and organisation is, however, admitted to be necessary for the successful development of the industrial undertakings. Without this, foreign manufacturers for many years to come will have no reason to fear Japanese competition. The report deals exhaustively with the cotton-spinning industry which is already being conducted on a considerable scale, thirty-eight mills having been started, with a capital of £2,028,645.

There are only three silk-spinning mills mentioned in the reports—two in the island of Kiushiu, established respectively at Nagasaki and at Nakatsu, in the province of Busen, and one in the neighbourhood of Yokohama. Concerning this last-named mill the following information is furnished:—"A number of Japanese interested in the silk business of Yokohama have formed a company, known as the Japanese Waste Cocoon Spinning Company, with the object of working up the waste product of silk. They intend to comb a certain quantity of waste silk and to offer it in this form on the foreign markets, and to spin 'boil' yarn for home consumption. At present the only spinneries of 'boils' in the country are two insignificant mills in the neighbourhood of Hachioji. The mill is situated some miles from Yokohama, and consists of an engine-house, boilmg and combing rooms, and 'boil' spinnery. The combing and boiling machinery and the engines and boilers used were imported from France, and are of the latest and most approved patterns. The 'boil' spinning machinery came from England. The combing shop contains twelve circular combing machines of the automatic type that, when worked day and night, are capable of using nearly 240 tons of waste cocoons, valued at, say, 150,000 dollars (£23,141), turning out combed waste (known in the trade in England as 'laps') about fifty-three to sixty tons per annum The 'boil' spinnery is capable of producing sixty tons of yarn yearly, valued at, roughly, 60,000 dollars (£9,256). The water that runs through the grounds of the manufactory has been found most suitable for the boiling-off (discharging) of the waste, a factor entering very largely into the production of good quality wastes. The total cost of the mill, including ground, buildings, machinery, etc., has been about 140,000 dollars (£21,597)."

Weaving by the aid of foreign machinery (says the report) is at present conducted on a very small scale in Japan. There are only two establishments of importance—a cotton mill in Osaka and a woollen weaving mill in Tokio. The former is owned by the Osaka Spinning Company, by whom it was purchased in 1888, with the object of securing a constant outlet for their yarns. Were it not for the fact that, in order to stimulate the home industry, the Japanese Government have transferred to this company the large order for cotton cloth for the underwear of the army, which was previously placed in England, the working of this establishment would probably shew a loss, for there appears to be little demand for the cloth woven. With reference to the woollen weaving mill in Tokio the following information is given:—"The woollen mill at Senjiu, a suburb of Tokio, is the property of the War Office, and is engaged in making cloth for military uniforms and flannel for soldiers' underclothing. It was established in 1879, the system followed and machinery used being German. The wool is imported from Australia, *viâ* London, and from India and China; but direct importation from Australia may soon be looked for. The average yearly consumption is about 1,000,000 lb., and the cost laid down at the mill, about 1s. 7d. per lb. The cloth made consists of a strong kind for soldiers' great coats, and ordinary uniform cloth, together with a small quantity of flannel and some superior cloth for officers' uniforms. Yellow and scarlet cloth for facings is also manufactured, the dyes for these being imported from Germany. The whole of the cloth required for the army is made at this mill. The output last year was 31,000 yds., valued at £95,000. The width per piece averages 50in. The number of hands employed is 510, viz., 300 women and 210 men, and their average pay is 5d. and 9½d. per day respectively. The mill is run all night, the electric light being used, and the hands changing at six p.m. and six a.m. The average working time is twenty-two hours per day. It should be mentioned, however, that the hands are engaged to work only nine hours per day and receive extra pay for the two hours of overtime. Most of the cloth is made of wool which is dyed before spinning, but some of it is dyed in the piece. The spindles used are 'mules.' A German dyer is employed at this mill, but will leave at the end of the year (1891.) Being a Government concern figures were not given, but I was assured that till recently the receipts were in excess of the expenditure, and that at present they about balance."

A NEW illustration of the distances of the stars is that it would take all the Lancashire cotton factories 400 years to spin a thread long enough to reach the nearest star at the present rate of production of about 150,000,000 miles per day.

CLOTH of a good quality, comparing well with that imported for clothing from Europe, is made at Gurun, in Asiatic Turkey. A special variety of bright-coloured woollen cloth, in fantastic designs, used for girdles and women's dress, is also made there, and has a wide reputation. A coarse, rough cloth, used by villagers and the poorer classes in the cities, is extensively manufactured in nearly all villages. There are nowhere any factories, all the weaving, dyeing, spinning, etc., being done by women at home. English yarn is used to a large extent in Gurun and Divrik.

THE principal industry of the city of Sivas, Turkey in Asia, is the manufacture of woollen socks. It is estimated that over 500,000 pairs are manufactured per year. They are exported to Kharput, Mosul, and Aleppo. They are made by hand from native yarn spun by the women, and are coarse and rough in texture They sell for from 2½ to 4 piastres (10 to 17 cents) per pair.

DEATH OF MR. JOHNSTONE DOUGAL, THE INVENTOR.—Mr. Johnstone Dougal died of heart disease at Manngatawhii Valley, Po-Kend, Auckland, New Zealand, at the ripe age of 70 years, on 9th April. Mr. Dougal was born at Newburgh, in Fife, on the Firth of Tay, and, when able to work, went to the flax mill of Mr. D. Youle, at Dura Den. In 1852 he arrived in Melbourne, and after staying there 18 months, came to Raglan, Auckland, in 1854. When the troops went into the Waikato District in 1863, and the settlers were called in, Mr. Dougal left Raglan, and came to Onebunga, where he invented the flax-stripper in 1868. With some of his new machines he took a mill and farm at Waitangi, Wainku, and some years afterwards he removed to Manngatawhii Valley. He was a man of quiet and unobtrusive manners, of high probity and integrity, great perseverance, and was kind and obliging to his neighbours. Mr. J. L. Sinclair, an Orcadian, early saw the value of the Dougal machines, and advocated their adoption in 1868, and defended the principle of their construction in 1870.

COTSWOLD SHEEP.—The latest addition to our flock books—("The Cotswold Flock Book." First volume. Cirencester: Printed for the Cotswold Sheep Society by Baily and Son, Market-place. 1892)—relates to what is, perhaps, the oldest breed in these islands—that which comes from a district which takes its name from the "cotes" in which even in Scriptural times sheep were wont to be kept. The volume is thus more than usually interesting, as, in addition to the detai's and history of the 45 flocks entered and the pedigrees and distinctive names of 403 rams and 645 ewes, there is a capital history of the breed (to which the first prize was awarded), written by Mr. W. H. Harmer, of Cirencester. In this it is pointed out that before the times of the Romans sheep were not domesticated in this country, and that the probability is that they were introduced by the Romans. Certain it is that in Saxon and Norman times the Cotswold sheep were associated with the district around Cirencester, and from those times until now their history has been continuous. The breed has been much improved during the past century, and the issue of the present flock book shews that the breeders of to-day are fully alive to the need for keeping the Cotswolds well to the fore in the markets of the world.

THE cotton spinners of Japan are agitating for the abolition of the import duty on raw cotton. In consequence of opposition to the proposal, on the ground that the removal of the duties would seriously affect the production of cotton in Japan, the Department of Agriculture and Commerce has been making special investigations into the matter, and the spinning companies in Tokio and Osaka have also sent representatives to the cotton-growing districts to make enquiries. Already a report has been issued by the Tokio and Kanegafuchi Spinning Companies. According to this, indigo and mulberry trees have been planted, principally in Owari and Mikawa provinces, while in the neighbourhood of Nagoya sweet potatoes are planted, as a result of which the cotton plantations have decreased. These places were well known for their production of cotton, but as the profits are small as compared with other crops, the raising of cotton has been discontinued. In Mito district also there is apparently a tendency to substitute rice for cotton, and the same may be said to be the case in the Kansei districts. The reason why cotton raising has been discontinued is because it has become cheaper to buy cotton yarn than to raise cotton with which to make yarn. Such being the case, there is no fear that the cotton crop will be in any way affected, or the profits of farmers be decreased by the abolition of the import duty on raw cotton.

AN EXTRAORDINARY CARPET.—At the galleries of Messrs. Vincent Robinson and Company, of Wigmore-street, London, W., there has been on view what may probably be called the finest Persian carpet in the world. This is the Holy Carpet of the Mosque of Ardebil, in Persia; a carpet which for size, beauty, condition, and authenticated age is entirely unrivalled by any known example. To quote the description given by Mr. Edward Stebbing, the managing director of the firm, and a well-known authority on these matters, "The dimensions of the carpet are 34ft. 6in. by 17ft. 6in. The ground of the body of the fabric is a rich blue, covered with a floral tracery of exquisite delicacy and freedom of treatment. A centre medallion of pale yellow terminates on its outer edge in 16 minaret-shaped points, from which spring 16 cartouches, four green, four red, and eight cream; and from two of these again are, as it were, suspended and hanging in the direction of the respective ends of the carpet, two of the sacred lamps of the mosque." But the most extraordinary detail of all is the pale cream cartouche placed within the border at the top end of the carpet, bearing its inwoven inscription, which is thus translated:—"I have no refuge in the world other than thy threshold. My head has no protection other than thy porchway. The work of the slave of this Holy Place, Maksoud of Kashan, in the year 942." Now, 942 of the Hegira is 1535 of our era; so that the carpet was actually in existence, in the mosque of the sacred city of the Suffavian Dynasty, at the time when Queen Elizabeth sent Anthony Jenkinson on an embassy to Shah Tamasp. It need not be said that carpets thus signed and dated are extremely rare, and are historically important as forming the *points de repère* for the students of Oriental art. But a carpet not only dated and signed, but of such size and beauty as this, is literally a thing unheard of. In an adjoining room the firm have hung four specimens of very ancient Persian art, of much smaller dimensions, but still of great beauty and rarity, particularly one, about 7ft. by 6ft., with a deep red ground on which various forest trees are woven, with a stream running through them.

THE GOLDEN THREAD.

A maiden stood in an old-world room,
With the early light on her golden hair,
And said, as she dusted her silent loom:
"The web of my life shall be bright and fair.
I will hasten to choose some silken strands,
And begin my work in the morning hours,
While the dew-beads gleam on the meadow-lands,
And the air is sweet with the breath of flowers.'

So she wove together each slender thread
Till the web grew broad and the web grew strong,
While high in an elm-tree overhead
A blackbird warbled his matin song.
But noontide smiled on the hill's green slope
Ere she said with a sigh of soft regret:
"I have finished my threads of faith and hope,
And the hues of my web are sombre yet!"

Then, over the bridge where the runnel flowed,
And under the shade of the leafy lane,
In broidered doublet a stranger rode,
With something bright at his bridle-rein,
Who bent her unfinished work above
To say in a whisper: "Maiden sweet,
You need but this golden thread of love
To make the web of your life complete."

Did the woof break off with a sudden jerk
As the gleaming shuttle was swiftly thrown?
For the maiden found it was weary work
Weaving Life's intricate web alone.
And the stranger saw that her face was fair,
And spoke of the road and the scorching sun,
And owned 'twould be pleasant her task to share
By the rose-screened pane till the day was done.

So he wove with her till the light grew dim,
And daisies closed on the quiet lea,
And the blackbird ended his vesper hymn
On the highest branch of the old elm-tree.
When the minster clock in the tower struck eight,
And shadows lay on the hill's green brow,
She rose and said: "It is growing late,
And I think that my web is perfect now!"

The years went on, and his youth had fled
When they stood once more in the quaint old room.
Time's snows had silvered her golden head;
The dust was thick on the broken loom.
But he looked at the web they had wove that day
When Life was young and their hopes were new;
When he rode o'er the bridge by the leafy way
'Neath a sun that shone from a heaven of blue;
And, folding in his her white, worn hands,
He kissed her there by the rose-screened sill,
And said: "Sweet wife, through these faded strands
The thread of our love runs golden still!"

—E. MATHESON, in *Chambers's Journal.*

Textile Markets.

*** Owing to the Whitsuntide Holidays, this issue of *The Textile Mercury* is printed in the middle of the week; consequently, certain market reports and other matter are unavoidably omitted.

COTTON.

MANCHESTER, WEDNESDAY.

We are in the midst of the holidays, and business, since our last report, has practically been suspended. Liverpool closed on Friday last until this morning, when business was resumed. The enquiry is only reported to be moderate, and the tone quiet. At the close of business here on Friday, it was practically suspended until Tuesday next, as the exodus to the seaside immediately commenced; and, this, owing to the prospects of brilliant weather, was further stimulated on Monday (Bank Holiday). Yesterday there was only a very indifferent muster on 'Change, several of the districts, including Blackburn, taking their play-time in the first part of the week. There was no change evident. Business here is now practically closed for the week.

WOOLLENS AND WORSTEDS.

BRADFORD.—Monday being Bank Holiday the usual market in the worsted trade was suspended. Some in the trade, however, made attempts to effect business, as appeared from the small attendance on 'Change and in a few warehouses, but efforts in this direction had little, if any result. In the afternoon there was no attendance either on 'Change or in warehouses: business was entirely suspended, and the holiday became general in all departments.

HUDDERSFIELD.—There was quite a holiday here on Tuesday, and the business transacted was therefore only nominal. The condition of trade in the town and district continues to improve, and the weather has been altogether extremely favourable for a good merchant trade. The manufacturers of special makes of goods for the Continent and the American markets are very well employed on orders. There is a great demand for the smaller designs in checks and neat stripes, the taste for the bolder stripes having declined, and the neater the designs the more readily are they picked up. Spinners are moderately busy. The local wool trade is steady and prices are firm.

ROCHDALE.—Owing to the Whitsuntide holidays, commercial business is practically suspended, and no change is expected to take place for at least a week. Manufacturers are anxiously awaiting the result of the merchants' travellers' visits to the retailers, and particulars as to the goods required. Prices keep firm. The mills are working full time, but close on Friday (yesterday) for the holidays. Very few Yorkshire goods makers were present at the market on Monday. There was no change in prices. Manufacturers are buying wool very sparingly. Staplers are firm in their quotations.

GLASGOW.—Messrs. Ramsey and Co., wool brokers, in their report dated 7th June, say:—*Wool*: The Scotch wool market continues quiet, with only nominal business doing. The first public sale of the new clip is fixed to be held in Glasgow on 22nd June, and early lots are now coming forward for that date. The trade is likely to remain inactive till values are tested by the sales. *Sheep-skins*: The supply has rather fallen off, with a larger proportion of shorlings and lambs. Competition has been fairly active, and prices are well supported.

FLAX AND JUTE.

DUNDEE.—Messrs. Wilson and Berg report there has been a little better feeling manifested in our trade during the past week, and in the jute branch buyers have shewn more confidence in placing orders. Prices are in consequence firmer, and the outlook more hopeful. In the linen trade business is steady, and without any new feature. There is still little animation in the flax and tow market for spot goods, although on the whole enquiries are rather more numerous, and holders ask steady prices. Several hundred tons of flax and hemp tow were destroyed by fire at the docks last week, and this curtails the available supply. The jute market has undergone little or no change since last report. There has been a better enquiry, but buyers are still confining their purchases within the narrowest limits. The prospects of better trade in manufactured goods are improving. The very small quantity afloat naturally points to better prices being obtainable later on. To-day there has been more enquiry, but buyers' ideas being much below sellers' little business has resulted. There is no change to report in the market for flax and tow yarns during the week, and the demand continues inactive. Jute yarns have been in better request, and prices are firmer. To-day business in flax and tow yarns has been restricted, but for jute yarns there has been more enquiry at a slight advance in price. In the linen trade there is nothing of special interest to report, the holidays in the south having rather interfered with business in the home trade. In jute goods there has been decidedly more doing, and prices are firmer.

BELFAST.—There was a fairly good feeling in the market on Tuesday, but Whit-Monday being a sort of holiday the week's business will probably shew some decrease. The present hot weather is very favourable to the flax crop, which is in excellent condition. Yarns meet with moderate attention, and prices are the turn stiffer. Owing to bad reports on Continental flax, spinners keep well foresold, and decline all orders except at full rates. Brown power-loom linens have not been very brisk, and the orders placed are scarcely sufficient to keep down stocks; handlooms sell as offered. The home and shipping trade in white cloth is unchanged.

Joint Stock and Financial News.

NEW COMPANIES.

JOHNSON'S PATENTS, LIMITED.

Registered by Addleshaw, Warburton and Co., 7, New-court, Carey-street, W.C., with a capital of £40,000 in £10 shares. Object, to carry into effect an agreement made between R. Johnson and this company, and, generally, to carry on in all their respective branches the businesses of millwrights, ironfounders, mechanical and electrical engineers, etc. First directors are: H. Mallalieu, R. R. Buck, F. Mallalieu, R. Johnson, and E. R. Buck. Qualification, £500. Remuneration, £300 per annum and 25 per cent. on the net profits after payment of 10 per cent. dividend.

QUEBEC ASBESTOS COMPANY, LIMITED.

Registered by H. O. Mellor, 27, Clements-lane, E.C., with a capital of £25,000 in £1 shares. Object, to carry into effect an agreement, made between G. White and this company, for the acquisition of certain asbestos-bearing properties in the township of Cleveland, Quebec, Canada. The first directors are to be elected by the signatories to the memorandum of association. Qualification, £250. Remuneration 10 per cent. of the net profits divisible.

UPPERMILL SPINNING COMPANY, LIMITED.

Registered by Bower, Cotton and Bower, 4, Breams-buildings, Chancery-lane, W.C., with a capital of £15,000 in £5 shares. Object, to carry into effect an agreement made between H. Greaves and C. H. Roscow, for the acquisition of certain land and buildings at Uppermill, Yorkshire, and to carry on business as spinners and weavers, dyers, bleachers, etc. First directors are G. Newton, F. Isherwood, J. Franklin, and T. Greenhalgh. Qualification £100. Remuneration, £250, divisible.

HARRY WALKER AND SONS, LIMITED, DUNDEE.

Capital £150,000 in 5,000 preference and 10,000 ordinary shares of £10 each. Object, to acquire and carry on the business of Messrs. Harry Walker and Sons, spinners, manufacturers, and merchants, in Dundee. Subscribers:—

	Shares.
J. H. Walker, spinner, Dundee	1
Isabella Walker (wife of J. H. Walker).....	1
W. N. Walker, spinner, Dundee	1
E. C. T. Walker (wife of W. N. Walker)....	1
H. Walker, spinner, Dundee.....	1
D. S. Fergusson, banker, Glasgow.....	1
J. J. Johnston, solicitor, Dundee	1

The first directors are J. H. Walker, W. N. Walker, and H. Walker.

Patents.

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7,612 SEMMLER Straight-bar knitting machines.
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11,164 FIELDING, W. and H. A. Looms.
11,268 BRINTONS, Ltd., and GREENWOOD. Looms.
11,490 WILSON. Flanged bobbins.
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2,099 PADMORE. Hosiery fabrics.
6,493 WINDLE. Cloth finishing machinery.
6,545 TOPHAM. Cross weaving looms.
6,550 MILLS (*Bergier*). Spinning and treating silk.
6,664 TERRY and RAWNSLEY. Looms.

AMENDED SPECIFICATION.

8,326 (1889) HILLAS. Dobbies for weaving.

ABSTRACTS OF SPECIFICATIONS.

21,175. December 30, 1890. **Looms.** J. and R. LINDSAY, 4, Somerville Place, Dundee.

Warp-beams.—The flanges A are made of comparatively thin plates of steel or wrought iron, the said flanges being entire or in halves. Various methods of securing the flanges in position are described. *Drawings.*

21,205. December 30, 1890. **Dyes.** T. PETERS, Chemnitz, Saxony.

Relates to the preparation of compounds soluble in alkali related to the red dye-stuff derived from anilido-naphthoquinone-anil, and to colouring matters which are sulphonic acids of these products. Consists in heating with aniline and aniline-hydrochloride the following sulphonic acids, viz.:—Meldola's nitroso-*beta*-naphthol mono-sulphonic acid, nitroso-*beta*-naphthol disulphonic acid R or G, nitroso compound of phenyl-*beta*-naphthylamine sulphonic acid (2 : 6), benzene-azo-*beta*-naphthol-monsulphonic acid (2 : 6), benzene-azo-*beta*-naphthol-disulphonic acid R and G, benzene-azo-*beta*-naphthylamine-sulphonic acid (2 : 6), benzene-azo-phenyl-*beta*-naphthylamine-sulphonic acid (2 : 6), benzene-azo-naphthalidin-sulphonic acid (1 : 5), or benzene-azo-*alpha*-naphthol-*alpha*-sulphonic acid (1 : 5). The products are soluble in alkali, and possess but a low dyeing power. By heating them with sulphuric acid on a water bath until soluble in cold water, sulphonic acids are obtained, the alkali salts of which are soluble in water, and dye animal fibre in an acid bath a fine reddish-violet shade. By sulphonating this product again at a temperature not exceeding 50° to 60° C. with fuming sulphuric acid containing 20 to 25% of anhydride, it is converted into a colouring matter which dyes wool in an acid bath a pure flaming red colour.

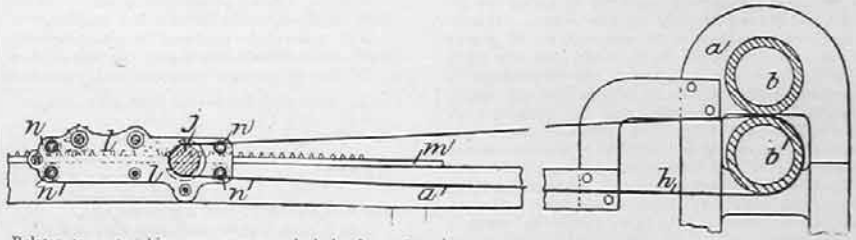
21,230. December 30, 1890. **Pile fabrics.** J. W. BARKER, Norristown, Pennsylvania, U.S.A.

A "Brussels," "Wilton," or tapestry carpet, or other fabric is woven with a raised or figured pile portion and a pileless or plain ground portion. In the figure a_1, a_2, a_3, a_4, are the pile warps, B, C binder warps, D, E wefts, and H surface warps. The pile threads may be cut or not, as desired. The pile and upper weft threads are of worsted or kindred material, whilst the binder warps are of linen or the like. The surface warps may be of worsted, cotton, or silk. A mottled effect may be produced by having the binder warp, upper weft, and pile threads of different colours.

21,284. December 31, 1890. **Dyes, etc.** J. R. GEIGY, Basle, Switzerland.

Relates to the manufacture of diethyl-dibenzyl-diamido-diphenyl-disulphonic acid, and of wool dyeing violet colouring matters therefrom. Consists in the first place in heating ethylbenzyl-aniline with sulphuric acid to 180° C. until soluble in alkali, neutralizing the solution of ethyl-benzyl-aniline sulphonic thus produced, acidifying again with hydrochloric acid, and boiling for an hour with formaldehyd, and then adding caustic soda to keep the diethyl-dibenzyl-diamido-diphenyl-methan sulphonic acid thus produced in solution. The solution is next diluted, a paste of lead dioxide is added, and hydrochloric acid is stirred in, whereby diethyl-dibenzyl-diamido-benzhydrol is produced. Dimethyl or diethyl aniline is next added, and the mixture is heated to 35° C. until it turns violet, and the dimethyl-diethyl-dibenzyl or tetraethyl-dibenzyl paraleuk-aniline disulpho resulting from this combination is converted into colouring matters by stirring with lead dioxide.

21. January 1, 1891. **Driving-belts.** F. REDDAWAY, Cheltenham-street, Pendleton, Lancashire.



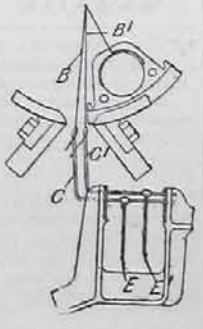
Relates to a stretching apparatus, particularly for endless bands. A pair of long rails a_1 connects pairs of frames a, in which are journalled calendering rolls b, b_1. To enable the belt h to be slipped over the roll b_1 one of the frames a is provided with a hinged opening part carrying one of the bearings. The other end of the belt is slipped over the roller j, which is dropped in U shaped collars on the frame l. This frame fits between the rails a_1 and is moved to and fro to stretch the belt by a rack and pinion arrangement, being supported by rolls n, n_1 bearing on the plain parts of the racks, which can be secured to the rails at any distance from the rolls b, b_1.

33. January 1, 1891. **Fabrics, woven.** T. TAYLOR and J. Warburton, Bolton.

Coloured figured cloth having a tapestry effect, etc. for anti-macassars, curtains, table cloths, etc., is produced by weaving together two warps and two wefts. The ground warp is composed of coarse yarn of two or more colours and is woven with a fine weft. The face warp, which is finer and preferably of one colour is woven with a coarse weft. The coarse warp is drawn through the jacquard harness and forms the pattern by selected portions being raised when the coarse weft is interwoven to form the ground of the cloth. When the portions are not raised, the figure portion appears on the surface of the cloth.

57. January 1, 1891. **Lace-making.** R. GRANGER, 210, Mansfield-road, Nottingham, and W. E. DALBY, 161, Edleston-road, Crewe.

The warp, spool, or bearer threads B, B_1 are operated independently from jacquard bars E, E_1 through the intervention of cranked or other levers C, C_1.



75. January 2, 1891. **Looms.** L. LETALLE, Beauvais, Oise, France.

Relates to looms for weaving chenille for carpets and other fabrics. The wefts are inserted by a nipper, which is advanced through the shed by cam, spring, link, and lever mechanism, and grips the weft which is presented to it. The weft is then drawn through the shed and cut at both sides of the loom by shears. The nipper-blades are opened and closed at the required times by a spring and cam, the latter being turned by a finger which comes against a fixed wedge on the beat up. The shears are operated by contact with a fixed bowl, and are kept closed by a spring hook during the beat-up, on the completion of which they are released by contact of the hook with stops. The lay stops in its back position to allow of the picking action; a slot in the connecting-rod allows for this. The wefts pass from a creel through the eyes of sectors, which are pivoted on a support, and are brought into position to be caught by the nipper by keys and cords passing over pulleys, the keys being depressed as required by the operator. *Drawings.*

92. January 2, 1891. **Fats.** C. W. KIMMINS, Downing College, Cambridge, and T. CRAIG, Bradford.

Fatty or greasy matters are separated from the wash waters of wool-washing or scouring establishments by treating these with a neutral or slightly alkaline compound, such as a salt or oxide of calcium, barium, or analogous metal, or mixtures thereof, with or without the addition of bleaching powder. The separated greasy matters are afterwards treated with sulphuric acid. To increase the caking qualities of the product a small quantity of a soluble sulphate may be added. The colour or quality of the fats may be improved by treating them with jets or streams of air, gas, vapour, or steam.

122. January 3, 1891. **Pile fabrics.** H. LISTER, Ashbrow Mills, Huddersfield.

Relates to the manufacture of pile fabrics, in imitation of the skins of animals, for ladies' wear, carriage-rugs, door-mats, etc. The loops forming the pile are made of different lengths by using wires of different depths in the weaving. When the pile has been cut it is lashed out by teazles or cards, the threads being thus made finer at the points than at the roots. The fabric may be backed with imitation leather, consisting of a coating of india-rubber or other suitable material, coloured or stained. For imitating sealskins the loops may be woven of equal lengths. The pile may be dyed or tipped to resemble the colour of the hair of various animals.

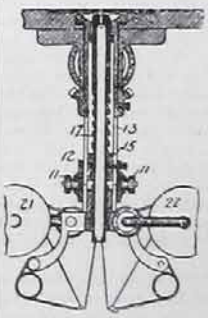
123. January 3, 1891. **Spinning.** G. F. PRIESTLEY, Hope-street, Halifax.

Relates to apparatus for preparing the tufts of fibre for the holders of silk-dressing and other machines. The fibre is passed through an ordinary screw gill box, but instead of the sliver being formed into a ball, etc., as usual, it is wrapped round one of two fluted drawing rollers, preferably the upper one, and when a sufficient quantity of fibre has been wound thereon the machine is stopped automatically and the fibre is cut by a knife, etc., along one of the flutes of the roller. The top roller may be plain and provided with a single flute to facilitate the cutting operation; it may also be inlaid with one or more strips of wood, etc. to receive the point of the knife and be carried by an arm, which may be forced downwards by a lever. The strap fork is operated, for stopping the machine, through a lever system by means of a stud or projection on a large wheel driven from the roller axle. In the Provisional Specification an improved gill pin is described, having a spring loop at the base to give to it greater elasticity. *Drawings.*

188. January 5, 1891. **Embroidery.** J. RUCKDESCHEL, Plauen, Saxony, Germany.

Ornamental stitching.—Two threads are alternately drawn in loops through the material, all the loops being in one line, and each loop being drawn through the previous loop of the other thread.

A machine for making such stitching has an ordinary vertically reciprocating hook-needle and universal feed mechanism. The threads are supplied from bobbins 21, 22 carried by a tube 13, which is revoluble by connection with the feed directing handle, and they are delivered from lateral holes near the top of the tube 17, provided with an axial needle throat. This tube is circularly reciprocated by a screw thread on it engaging a nut 15, connected by screw within a vertical slot in the tube 13 with a loose sleeve 12, which has a circular groove engaging pins 11 on a lever connected with a rod and strap and an eccentric, which is rotated by gearing from the needle-driving shaft at half its speed. Each thread alternately is thus laid into the hook, which draws the loop through the material and through the previous loop.



202. January 5, 1891. **Wire Cords.** E. GESSNER, Aue, Saxony.

The teeth of card fillets are set in oblique rows, so that when the said fillets are wound spirally on their rollers the rows of teeth shall be parallel to the axes of the rollers. To effect this the fillets are bent laterally within the setting machine, and several methods of doing this are described in the Specification *Drawings.*

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COTTON UNCOMMERCIAL.

There are many ways of looking at cotton. It may be approached with advantage from the statistical side, bringing into view the marvellous developments of its culture, trade, and industry, the millions of money invested in it, the population and interests dependent upon it. It may also be approached, but without so much advantage, from the profit-and-loss direction, upon which Mr. Goschen had something to say not long since, proving that the "cotton lords" enjoy very little more than an empty title. There is the historical standpoint, from which the outlook is unlimited, either in point of time or attraction, connecting the finished spindle, which appears to lose substance in the velocity of its revolutions, with the rude implement that had been used for years untold before invention put more power into it, and tracing all the mighty productive capacity of modern machinery to the first mechanical processes employed in clothing mankind. It would take a long time, or a big book, to completely exhaust even the ordinary inspirations of the chief among textiles, what may be called the commonplaces of cotton. There would still remain for consideration all the wider bearing of cotton in its effect upon the welfare and habits of the people, just as it was noticed long ago that the commoner wearing of printed calicoes, which required washing, led to greater personal cleanliness; and for the purpose we have at present more particularly in view, there would be plenty of room for study of the evidence, here, there, and everywhere, of adaptations of cotton in our language. Cotton-wool is an equivalent for luxury—to be lapped in cotton-wool implies tenderness of treatment. Cotton is still used in a figurative sense in many parts of the country, and if the applications of the word are not always obvious at first sight, there is so much the better opportunity for enquiry or conjecture. For instance, in a volume just issued by Mr. Elliot Stock, on "The Peasant Speech of Devon," we find cotton included as denoting "to beat lustily;" and in a sentence given to illustrate the occurrence of the word in this rugged vulgar tongue, it is written, "I'll cotton thy hide vur thee ef thee dissent come yer dreckly minit." There is the same emphasis given to the word, and no doubt as frequent an administration of domestic justice after it, in Northern as well as in other Western counties, and many a country lad has sore cause to know what cottoning means. There is the other and much more familiar metaphor in which cotton signifies agreement, mutual inclination and liking: as where it was said in Walker's "History of the Independents," that the Parliament "and their Masters of the Army could not cotton together;" and again in Drant's rendering of Horace—

> So feyneth he, things true and false,
> So always mingleth he,
> That first with midst, and midst with last,
> Maye cotton and agree.

As this occurs in a volume issued early in Elizabeth's reign, there are some centuries of justification for the colloquialism by which we "cotton to" any person. Further significance is given to the word in a way indicated by Dyche's "Dictionary" of 1777. There, following an amusingly inaccurate description of cotton as "a woollen kind of flax," brought at that time "from the Levant and both Indies," it is given again as a verb, "to agree, succeed, or hit," which is correct enough, for cotton stood in olden days as a synonym for success in any enterprise. Nares explains this as probably derived "from the finishing of cloth, which when it *cottons*, or rises to a regular nap, is nearly or quite complete. It is often joined with *geer*, which is also a technical and manufacturing term." Corroborative passages are given from Beaumont and Fletcher's *Monsieur Thomas*, 1619—

> Still, mistress Dorothy! This year will cotton.

From Lyly's "Alexander and Campaspe," 1584,

> Now, Hephestion, doth not this matter cotton as I would.

And from the "Family of Love," 1608,

> It cottens well, it cannot choose but beare
> A pretty napp.

This latter instance is explicit enough in its textile expression to contradict Mr. Smythe-Palmer's theory that cotton in this sense "is evidently an old British word still surviving, and has nothing to do with cotton, being identical with Welsh *cydundo, cytuno*, to agree, consent or coincide, from *cydun, cytun*, of one accord, unanimous, coincident, literally 'at one (*un*) together' (*cyd, cyt*). 'To cotton to a person' is then to be at one with him." The fact that cotton was undoubtedly imported and used for candlewicks and in padding garments from the thirteenth century onwards, together with the other fact—both open to conclusive proof—that woollen fabrics were called cottons long before the cotton manufacture was set up in this country, may well raise a qualifying doubt as to whether cotton-wool or animal-wool is referred to whenever "cotton" is mentioned in early days; but there cannot be any question that cotton, as a figure of speech, has a textile bearing in the quotations herewith collated, and in many others like unto them. Cotton may have been a corruption of an old Welsh word, and may have originally implied unity, but when it came to have a nap upon it, the textile trades put in their claim to it. In the States a rabbit is known as a cotton-tuft-tail, and a venomous snake with a white streak along its mouth is called the "cotton-mouth," and we might as well dispute the allusion to cotton in such cases as in the other references which have been given. But while the idea of cottoning to an agreeable person can be easily understood, how can the connection with a lusty thrashing or with the prosperous outcome of some undertaking be acceptably explained?

ARTIFICIAL SILK.

Marius Moyret, in *Le Moniteur de la Teinture*, writing on artificial silk, says that it has been noticed that the silk-worm, eating as it does vegetable tissues, takes in cellulose and nitrogen in some form or another through its fibre-glands, animalises these materials, and converts them into the silk fibre. For a long time the question o how to produce this silk artificially exercised the minds of chemists of all countries, with the result that the problem has been solved to a greater or less extent. On treating cellulose with cold, strong nitric acid, or, better still, with a mixture of strong nitric acid and sulphuric acid, there is obtained a series of products known as the pyroxylins. The most highly nitrated of these products is the hexanitro cellulose, which, under the name of gun-cotton, is used in the manufacture of explosives. The lower, bi- tri- or tetri-nitro celluloses, although somewhat inflammable or explosive, are used in the manufacture of artificial silk. The bi-nitro product is used in the manufacture of collodion by dissolving it in a mixture of ether and alcohol. By so dissolving nitro-cellulose, and forcing the solution through fine tubes, fine threads resembling silk are obtained. These differ from the natural

fibre in being a nitro product; that is, the atoms of nitrogen are combined with oxygen in the form NO_2, while in the natural product they are connected with hydrogen in some form or other. In composition artificial silk is very variable, owing to the fact that the action of the nitric acid forms a variety of nitro products. One essential difference between artificial and natural silk is, that while in the former oxygen is abundant, in the latter it exists only to a small extent, and there is more carbon in its composition. Khulman, of Lille, proposed many years ago to convert cotton into nitro cellulose, in order to increase its dyeing qualities, but at the same time he recognised that its inflammable properties were a great drawback to the adoption of the process. This inflammability is, indeed, the most serious hindrance to the extended use of artificial silk. It has been stated that this defect is overcome by a subsequent process of denitrating, but the author, from his experience, says that all the schemes which have been proposed have been impracticable on the large scale. As a matter of fact the means adopted to denitrate the silk, and so modify its inflammability, also destroy the additional dyeing properties which nitration has imparted to it. There are at present two methods of making artificial silk. The oldest, that of Chardonnet, consists in drawing a thread from a solution of nitro-cellulose in a mixture of alcohol and ether. The second method, invented and patented by Duvivier, in 1886, consists in drawing a thread from a solution of gun-cotton, albumen, and gelatine, in glacial acetic acid. The silk produced by this method resembles more closely natural silk than does that produced by Chardonnet's method; but on the other hand the use of glacial acetic acid as a solvent is rather a disadvantage, owing to its powerful corrosive properties, as it necessitates the use of silver, platinum, or glass vessels for dissolving the materials used in the production of the thread. Artificial silk is white, and has a fine lustre, but it is deficient in tenacity, which is another objection to its use. As to its dyeing properties, unfortunately it will not stand the action of boiling water, thus seriously impeding the work of the dyer. In dyeing the silk, therefore, it has to be dyed cold, and the old wood colours, such as madder, quercitron, logwood, weld, and orchil, give the best results. There seems at present no prospect of artificial supplanting natural silk, although, if better methods were discovered of denitrating it, which should leave it non-inflammable without altering its dyeing properties, it might, in the opinion of the Moyret, have a brilliant future before it.

Calico-Printing on the Continent: the Colourist Chemist.

Some time ago we reproduced some sarcastic remarks made to one of our reporters by a well-known dyer, who spoke of the lack of practical chemists in the silk trade. The reply to this was a vehement championship on the part of a Yorkshire gentleman—or rather a gentleman who spoke in Yorkshire—of the rule of thumb. The rule of thumb, we were told at a dyers' meeting in Bradford, had made England what it was. Rule of thumb was everything—science nothing. The speaker did not ask three cheers for rule of thumb. Probably he intended to do so, but forgot. A little while ago, Lord Masham, (better known as Mr. S. C. Lister), speaking at a Society of Arts meeting, upheld the same view. Somehow or other, he said, Englishmen always thought they could beat the world without troubling to learn. So far as Lord Masham knows there is not a technically-taught person about Manningham Mills. His dyers produce some of the finest colours in the world, but it is all done by rule of thumb. This is well so far as it goes; but if England can do so much without technical education, the inference is that she could do much better with its aid. Lord Masham admits that we should occupy a much more commanding position if we had thought of technical education earlier. The statements made by "rule of thumb" advocates are all very well in their way; but the opinions we have reproduced are not, we are glad to think, universal. The chemist of a well-known firm said to us the other day that the weak point in connection with calico printing here is that the pattern sampler is not a chemist. Our informant has had experience both in this country and on the Continent, and he affirms with all sincerity that English houses, as a rule, are not perfectly equipped. There are very few chemists in our printworks, and many judges think this a mistake. The sampler ought to be a chemist, because he has to know whether certain colours can be printed together. Colours that precipitate he is required to guard against, so that accidents may be avoided. In Alsace all the managers are chemists, and they generally have three or four young chemists under them. The same remark applies in a more limited degree to Rouen. The French managers are trained in the Mulhouse Schools, and many of those in Germany, Russia, Spain, and Italy are trained at the same place. Generally the young Continental chemist spends two years at the Mulhouse Laboratory, and during the last six months of study the theory of calico-printing receives special attention. Some attend the engineering or designing shop before commencing at the Laboratory, which they do not enter before the age of 17. Now that the export print trade calls for better styles, more resembling home-trade styles, the importance of having as printworks' managers men who are practical chemists becomes more apparent. If English calico printers gave attention to the development of the colourist chemist, there would be nothing to prevent them from equalling as a body the productions of Alsace firms, the beauty of whose work is universally recognised. Most of the machinery used on the Continent comes from England, so that our competitors have no advantage over us in this respect. In fact, as far as mechanical arrangements are concerned, English printers appear to be slightly ahead of their rivals. The calico printers of Mulhouse bring most of their designs from Paris instead of keeping *ateliers* (studios) of their own. We do not think that Mulhouse firms care to go to Paris for their designs, and they are making every effort, by encouraging the school, to improve designing in their own locality. In their trade, as in others, however, the best man must of necessity win, and if Parisians, whose artistic ability is assisted by the profusion of beautiful objects to be found in their glorious city, can maintain their lead, England, as well as Alsace, will continue to buy designs from them. Rouen does not turn out such good work as Lancashire or the West of Scotland, many of its works being poorly equipped. In fact Mulhouse may be said to stand alone in its surpassing excellence of design and colour. The works of Mr. Franz Leitenberger at Cosmanos, Bavaria, should perhaps be excepted; the firm produces goods equal to the best Mulhouse productions, and it supplies the principal Austrian centres with fine prints. Italy and the States of the Balkan Peninsula also buy Mr. Leitenberger's goods largely. We described some of his productions a few years ago in *The Textile Mercury*, offering at the time to shew any of our readers samples. The work was so excellent that many affirmed that they were printed by the block method. It is a curious fact that while pointing out the superiority of the Mulhouse methods in many respects, intelligent Frenchmen have been known to admit that English print workmen are superior in other respects to the French, being stronger and better men, with a more perfect training in their special branch. They can be given greater responsibility than those of Alsace, where there are more overlookers and chemists. The view is an interesting one, and may no doubt be correct if applied to the employés of Potter's or Grafton's. We should not like to say, however, that the remark could be applied to the men engaged in the smaller works.

Some Textile Novelties: Flaxen Underwear from Balbriggan, Velvet Skirt Facing from Manchester, etc.

There is always something that is fresh to be found in the dry goods warehouses. Amongst the latest novelties introduced is a class of hosiery, the production of an Irish firm—Smyth and Company, "no less"—consisting largely of flax yarn, and appropriately named "Flaxonia." The makers are, of course, ready to claim all the virtues for the new material. It consists, we are told, of pure linen yarn, so spun as to render the garment beautifully soft, so that the most delicate skin can wear it, whereas both wool and silk are highly irritative to many. This is all very well in its way. Nothing is of course said as to the wonderful process which produces the extraordinary flax yarn referred to; but that is Messrs. Smyth's secret. Reading the circular of the manufacturers further, we learn that linen next the skin is recommended by the highest medical authorities. The objection previously felt to the use of linen underwear has been the cold nature of the garment when first put on, "but after long study and experiment, this difficulty has been overcome by making the garment absolutely porous, giving free ventilation to the skin, so that the article has now the comfort of silk whilst possessing more hygienic qualities, and much greater durability." Another great recommendation is that the goods improve by frequent washing. These claims, if verified by experience, should ensure for the new underwear a large demand. There will, of course, be numerous critics, and these Messrs. Smyth will require to answer. It can, at least, be said in favour of the novelty which the little Dublin town has sent forth, that the wearing of its product is preferable to the linen cure recommended by the Kneipp fanatics, who would have people jump into a cold bath, and then run barefoot for a few miles in order to get dry, after which—horror of horrors!—linen vestments must be donned. The new underwear is made in shirts, pants, combinations, vests, hose, and half-hose, for ladies, gentlemen's and children's wear, in three weights. Seriously, we wish the goods every success. If they succeed in securing for themselves a corner in an already crowded market, it will be by sheer force of attraction. There are two qualities in most trades which draw the notice of buyers. Omitting coal and pig-iron—an article may be said to be worthy of attention because of intrinsic merit, or it may sell on account of its novelty. The new underwear is undoubtedly a novelty, and we hope that, as time goes on, its makers will be able to boast that it possesses the other qualification so necessary to permanent success in all trades and professions—that of simple merit. The material is, no doubt, of a substantial character, and the name of Balbriggan is sufficient to satisfy one that the best machinery has been employed in the manufacture. If the standard objection to linen as an article of underwear can be removed by the experience of the wearers of the new article, then a further addi-