

us the least of two evils that the unfortunate individual who falls ill should bear it. In a less degree in, say a weaving shed, if a sizer should fall ill, the result would be the same. And again we say that in the event of a temporary substitute not being procurable, the employer, in equity, would be justified in giving a permanent engagement to another. If these considerations are valid, and we maintain they are, we do not see where the line has to be drawn. It will come down through all the grades of processes to the jobber, the weaver, and even the weaver's assistant,—the little tenter. Still the law that exists says otherwise, and as we believe this to be the principle of the common law, and not statute law, it seems impossible to repeal such a law, and therefore if unjust to the parties interested, provision must be made for obviating it in another way.

A SUGGESTED REMEDY.

A remedy for the above seems to us to lie in the introduction into contracts between employers and workmen of an express stipulation which should leave them the liberty of cancelling the contract if circumstances should so require it. Such provision would not affect existing conditions, beyond doing away with the risk of litigation as a consequence. Every employer would be anxious to secure the return of a good workman, and in every instance would endeavour his best to engage temporary substitutes, so that he could return on recovery without difficulty. Our suggestion is simply to obviate wrangling over respective rights when the inconvenience which we have pointed out arises. Now, there is no reason why manufacturers who exercise careful supervision over the details of their business, should not formally terminate any contract in sickness by the simple tender of the requisite notice, and so put an end to it. It would always leave them the option of re-engagement in the event of both sides desiring it. The foregoing remarks are induced by a case which was before the Blackburn County Court on Monday last, which illustrates the difficulties on which we have now commented. The brief report which follows speaks for itself without any need of further comment from us. On the occasion referred to the case of Holden v. Duckworth and Haworth was heard, and a decision of considerable importance to manufacturers was given. The plaintiff said he was employed as a taper, by the defendants, who are manufacturers at Blackburn, and on the 15th March last was unable to work on account of sickness. He immediately sent word to his employers, but on his return to work ten days later, he was told that the defendants would not discharge the man they had obtained to do plaintiff's work. The plaintiff claimed £3 10s., being 14 days wages, in lieu of notice. For the defence it was pointed out that rule V., of the mill rules stated that the employers did not engage to provide employment for any person upon recovering from sickness. His Honour decided that sickness did not put an end to the contract subsisting between the parties. The employers had undertaken, however, to give the plaintiff work on the first vacancy occurring, but as in this case that had not been applied for, the plaintiff had no claim. Mr. Polding appeared for the plaintiff and Mr. Withers for the defendants.

THE DARWEN WEAVERS' ASSOCIATION.

In the matter of organization the efforts of the operatives in the cotton trade put those of their employers to shame. Whichever branch, spinning or manufacturing, we look at, the

evidence is strongly demonstrative of the fact that a minder or a weaver contributes to the defence of the common interests of his class from twice to five times as much as his employer; and if we made our comparison on the basis of means, and multiplied these proportions by ten, we should not get beyond the facts. The last instance of this truth that has come under our notice is that of the Darwen Weavers' Association, which held its ordinary quarterly meeting during the week. The receipts for the quarter, it was stated, amounted to £966 10s. 7½d., including £61 19s. 4d. brought forward. The contributions totalled £402 7s. 7d. The gain for the quarter was £211 9s. 5d., and for the last quarter £318 18s. 4½d., making a total of £530 7s. 9½d. These are very respectable sums, and we may be allowed to regard such contributions as the source of the strength which the various associations feel, and which they are not slow to make their employers feel in various ways. We have heard of one association of employers, that of Todmorden, of which the members have never been called together for years, and have never been asked for a subscription. For all practical purposes such an association is defunct, and we therefore are not surprised to hear that manufacturers can be tyrannized over with impunity in such a manner as to drive them from the district. Our readers will find some remarks upon the matter to which we refer in another column.

JAPAN DEVELOPING HER SILK INDUSTRY.

Those enterprising people, the Japanese, now that they have entered into the lists as competitors in commerce and industry with the nations of the West are in no way disposed to let the grass grow under their feet. Europe has heard much of their efforts to introduce the industries of the West into their own country, and of the large measure of success that has attended them. But whilst doing this they are in no wise likely to neglect those native to the soil. Having in view the progress of technical education in the various countries of Europe and the increased care being given to sericulture in France, Italy, and Spain, they have determined to make efforts to improve their own. In 1887 several instructors in the mode of raising silk worms and reeling silk were engaged, and since then this industry shews signs of increased vitality. The wages of the instructors are paid partly by local taxes, and the cost of the schools defrayed by the villages of the neighbourhood and by those persons who are desirous of promoting the industry. New mulberry gardens are being planted, and increased attention is being given to the cultivation of those now existing. There was a marked advance in prices in 1889. In the latter part of October of that year 670 dol. (£104 6s. 9d.) to 680 dollars (£105 17s. 11d.), were paid per picul of 133½ lb., and in November 730 dollars (£113 13s. 7½d.) to 740 dollars (£115 4s. 9d.). The outlook, says our Consul at Nagasaki, is consequently improving for silk manufacturing companies. Hand-reeled silk for export to foreign countries did not exceed 2,000 lb., but large quantities were manufactured for home consumption. It is hoped that this industry will be favourably looked upon when the old-fashioned methods are abolished and a good article is placed on the market. The best cocoons are sent to Nagasaki to be reeled, but those of lower quality are reeled in the villages. Experiments in reeling by machinery are shortly to be made with a machine which has just been finished. The Nagasaki silk factory has increased its capital and extended the area of its buildings in order to carry on larger operations.

It may safely be said that the country means to relax no efforts to preserve and continue the prosperity of an industry so important to the well-being of large numbers of its population.

SHUTTLE-GUARD COMPETITION IN SAXONY.

Some time since the Saxon Textil-Berufsgenossenschaft offered a prize of 1,000 marks for the cheapest and best shuttle-guard, which was to admit of general application. The appeal met with a hearty response, not fewer than 60 persons, chiefly practical men, entering as competitors. The apparatus submitted have been carefully examined, and those that seemed superior to the rest subjected to a longer test, which extended from the beginning of the year until the middle of June. This was succeeded by another examination in the higher weaving school of Chemnitz, on June 23rd, by a prize-committee, assisted by a representative of the Government. The results have not yet been formally published, but a Leipsic contemporary has been privately informed that the problem is not yet solved, in the opinion of the committee, but that they regard some of the methods proposed as deserving of special attention. They also see in the competition a proof of the interest which weavers take in the subject, and hint that methods at present in use can be followed up with satisfactory results without any excessive difficulty or sacrifice.

THE BURNLEY WEAVERS' ASSOCIATION.

In another note we have referred to the thoroughness with which the weavers support their organisations, adducing that of Darwen as an example. Burnley affords a still more striking instance, as the quarterly report of the Association, just issued, fully shews. This document exhibits an income for the quarter of £1,315, and an expenditure of £587, leaving a net gain of £727. The society now possesses an accumulated fund of £6,694. This also ought to convey a moral to the employers.

THE VELVET AND SILK INDUSTRY OF CRELFELD.

The Crefeld Chamber of Commerce has just issued its report for last year. From it we learn that the total turnover in velvet amounted for 1889 to 29,664,134 marks, against 30,178,620 marks for 1888, this being the lowest figure since 1884. The number of hand-looms for velvet weaving dropped from 8,568 in 1888 to 7,448 in 1889; but the operatives who could not find employment in this department got work at once in the stuff-manufacturing branch, which was very busy. The wages paid for weaving in 1889 were not materially different from those for 1888. The fashion for velvet ribbons which prevailed in the summer of 1889 raised the number of hand-looms for this special class of goods from 238 in 1888 to 558 in 1889, and the number of power-looms from 23 to 84. In power-looms, generally speaking, there was an increase of 199 (2,214 in 1889, against 2,015 in 1888), but the machines were less vigorously worked. The exports of velvety fabrics to England shew a falling-off of more than 10 per cent.,—9,541,100 marks for 1889, against 10,728,666 marks for 1888. Stuff-weaving, on the other hand, had a very successful year, the total turnover amounting to 56,388,880 marks, against 45,769,924 marks for 1888. So the total production of the factories of Crefeld approximated to that of 1883, which represents the highest point hitherto reached—86,053,014 marks for 1889, 86,584,069 marks for 1883. The number of hand-looms rose from 12,886 in 1888 to 15,118 in 1889. The number of stuff power-looms was increased by 222, so that (exclusive of the ribbon

looms) there were in all 2,270. The sale of silk and half-silk goods in Germany was very extensive, showing a marked advance—26,380,924 marks, against 21,337,101 marks for 1888. This, of course, necessitated a great increase in the consumption of raw silk—473,599 kilos, against 390,728 kilos, and in the activity of silk dyeing works, which dyed for Crefeld manufacturers, 491,449 kilos., against 385,635 kilos. for 1888, and for foreign factories 284,189 kilos., against 226,543 kilos. for 1888. These figures represent 91 staff factories, 49 velvet factories, 23 silk-dyeing works, 12 cotton-dyeing works, and 10 establishments in which silk and cotton are dyed together.

TRADES-UNION TACTICS.

Not content with the system of "picketing" to which we have directed attention several times recently in connection with strikes in Blackburn and Preston, the weavers' unions never fail to avail themselves of every other means of accomplishing their purpose. The following advertisement, cut from one of the East Lancashire evening papers, speaks for itself:—

WEAVERS are requested to keep away from Padiham till the present wage dispute is settled.—By Order of the Weavers' Committee.

We suppose this referred to the strike at the mill of Mr. J. H. Whittaker, who, having been invited by numbers of his weavers to resume work at his Padiham mill, agreed to do so on the basis of the Burnley list of wages, these being terms to which they were quite willing to agree. But the Weavers' Union again interfered. We are pleased, however, to report that the dispute has been settled amicably, and honourably to both sides, on the basis of the adoption of the new Universal List, of which this may be termed the first fruit.

THE BELGIAN WOOLLEN TRADE.

The Verviers Chamber of Commerce reports that during the quarter ending with June last business in cloths had not been very satisfactory. The home trade has been sensibly affected by the unfavourable weather that has been experienced for several weeks, while orders from abroad fell off considerably. The English manufacturers, in accordance with their usual practice, continues the report, have followed the movements of wool, and have announced successive reductions in price. Some buyers desire the Belgian manufacturers to act similarly, although their principles are opposed to the practice. They prefer to adopt early in the season a standard of prices, from which there is no departure, allowances being made for the fluctuations in cost of production that may occur. This, according to some, is the best system, both for buyers and sellers. Although the Belgian manufacturers feel keenly the effects of foreign competition when there is a fall in wool, they think there is no reason for doing away with the system. The collections for the forthcoming summer will shortly be ready. Light articles for Brazil, Havana, and Mexico will probably be in demand, and to these goods producers are devoting attention.

THE NEW GENERAL WEAVING LIST.

As we predicted a few weeks ago, the more the proposed new list is examined the more it commends itself to the judgment of masters and men for its equitable treatment of the subject. The general Council of the Operatives' Associations, who appeared at first inclined to revolt against its proposals, are seeing on further consideration that it is on the whole a very just arrangement, and that on their side they

have met with very liberal treatment from the employers. Naturally, when expectations ran high that they were about to receive some considerable advantage, disappointment was felt to a corresponding degree at the non-realisation of these expectations. At a meeting of the Operatives' Council in Burnley on Saturday last, the subject was again considered, and the results of further investigation placed before it, when it was seen in much more favourable aspects than was previously the case. We have no doubt whatever that a little more examination will remove all the objections hitherto felt regarding it, and enable the operatives by its acceptance to do enormous service, both to themselves and the trade of these districts.

THE COLOURED WEAVING LIST.

This is a subject which has also been engaging the attention of employers and operatives, especially in the Nelson and Burnley districts. We understand that its details have been finally settled between Messrs. Rawlinson and Birtwistle, as representatives of the two parties interested. This will remove a considerable amount of irritation in the localities to which it will apply, and both parties are to be congratulated on that fact. It is astonishing what progress can be made in removing causes of difficulties, when there is an honest determination to perform the task.

HOW THEY MANAGE "PICKETS" IN PORTUGAL.

There is an old saying that "They manage these things better in France" than we do here. We were not always prepared to admit the correctness of the statement, though ready to allow that they did manage them differently. It would seem that the saying might be applied to Portugal, with a similar reservation. That country has not a very considerable textile industry, but such as it is, it would appear that it cannot be conducted with perfect harmony. The *Times* of Tuesday contained the following news amongst its telegrams:—

OPORTO, JULY 14TH.

A number of workmen employed in a spinning mill here to-day demanded the re-engagement of two of their comrades who had been dismissed, and endeavoured to stop other men from going to work. The police intervened, and a conflict ensued, in which one workman was killed. Order has now been restored.

We are sure the manufacturers and spinners in this country have no desire to emulate the proceedings of the Portuguese authorities, and to introduce the policeman; much less would they care to follow that of some other countries of the Continent, and bring in the military to shoot down strikers, however much provocation might be received. Still punishment quite as severe can result, as, for instance, when mills are closed owing to the persistent persecution of their proprietors by unionist officials for purposes of their own. These instances are not unknown in the Lancashire districts.

THE FACTORY ACTS AMENDMENT BILL.

Another conference on this subject has been held between the representatives of the employers and the operatives and Sir Henry James. Further progress was made in coming to an agreement upon various points at issue, but the work has not yet been completed, some of the propositions put forward by the operatives being totally unacceptable, whilst the counter propositions of the employers are apparently as unsatisfactory to the operatives. The question of the incidence of responsibility to the law for minor breaches of what it prescribes is, we believe, amongst these, and it is certainly desirable that the onus of responsibility should

be placed upon the shoulders of the real offenders. It is useless for any one to contend that to remove responsibility from the employer and place it upon the workman is in contradiction to the whole spirit of the Factory Acts, and to the leading principles of the common law. We are well aware that the Factory Acts originally were introduced in order to control the irresponsible power exerted by the employer in the conduct of his business. But times have changed since then, and now we venture to say that nine out of ten infractions of the law that take place are due to the operatives themselves, and as both they and their leaders seem everywhere to be enamoured with the desire of securing the infliction of legal penalties upon somebody, they had better try the application on their own shoulders.

Articles.

THE COTTON INDUSTRY IN JAPAN.

We have several times already drawn attention to the rapid growth of competing cotton industries in our several dependencies and various foreign countries. Amongst the latter one of the most important, and one whose competition is most likely to be severely felt, is Japan. This is because of the fact that it is located right in the midst of our Eastern customers, and that it not only possesses a suitable climate, and grows its own material, but also because the Japanese themselves are the most intelligent and enterprising race of people in the East. This is proved by the rapidity with which, since they have opened their country to Western civilisation, they have received and have made their own the principal industries of the West. The Government has sent bands of students to the leading European countries and to America: smart, bright young men, who have been able to investigate our labour systems and appreciate their excellencies, and have reported upon them accordingly. Thus, as a consequence, mills are springing up on every hand in Japan, and the production of native cotton is proving quite inadequate to meet their requirements. According to Japanese statistics, the annual cotton crop is about 41,000,000 lb., whereas the demand for cotton piece goods, yarn, and thread is estimated at more than double that amount, the deficiency being made up by foreign importations, mainly from China. As may therefore be expected, the trade in this important staple is a growing one, and has already assumed large dimensions, the importation for last year having been upwards of 8,000,000 lb., as against 3,793,000 lb. in 1888. Chinese cotton is very similar in character to native cotton, short in staple, but harsh and woolly, in that feature being something like the rough cottons of Peru. But the Japanese do not propose to remain content with these, and therefore last year inquiries were instituted on the spot as to the possibility of using Indian raw cotton in their mills with better results than the China staple; a commission investigated the question very minutely, and has reported favourably. This result is of great interest and value to all concerned in the cotton trade, as immediate effect was given to the recommendations of the commission, the raw cotton having already arrived in Japan side by side the native Indian-spun yarn.

It would seem, therefore, that the trade which Bombay has carried off from Lancashire is not likely to be retained very long, as, though some surprise has been felt that Bombay raw cotton

can be shipped to Japan and spun with the expectation of successfully competing with the foreign yarn placed on that market, inquiry has shewn very clearly that, compared with India, available labour is cheaper there. American cotton is also being imported, and mixed with that from China it is expected to produce a quality of yarn better than that now turned out by the mills. Large sums of money have been sunk in the numerous cotton spinning mills erected in various parts of the empire, and the production of these is gradually affecting the import trade in cotton yarns. As the Japanese cotton crop, always uncertain, is, even at the best of times, far short of the home demand, foreign cotton, it is stated by our Consul at Yokohama, is now and will continue to be largely used with the native article, probably to the extent of some 80 per cent. Lancashire has, therefore, need to keep herself wide awake to the conservation of her interests in the future, and it behoves both spinners and manufacturers to take a much wider view of the matters affecting and likely to affect them than they have hitherto shewn themselves disposed to do.

Perhaps a few figures relating to these mills, from a consular return just issued, may bring this matter home to the convictions of our readers more forcibly than any remarks of our own. In April, 1889, of 25 mills enumerated, two make no return. The remaining 23 are stated to contain a total of 133,326 spindles, mule and ring together, or an average of 5,800 each. This, of course, represents a very small matter, as there are single establishments containing three times this total in this country. But one disadvantageous feature for the English trade in this respect is that there are 25 centres of development and growth, which will enable the trade to spread much more rapidly than if it were spreading merely from one common point. That this movement is making rapid progress is proved by the returns made in December last, wherein 27 mills are enumerated, three of which make no return. The 24 mills report the possession of 97,758 ring spindles, and 102,792 mule spindles—total 200,550. Thus the average has sprung in the course of a few months from 5,800 to 8,356, a progress which must be regarded as marvellous, as it shews that the people of Japan are beginning to find out that in connection with their circumstances the trade is a profitable one. The time worked per day by 18 mills out of the 24 last mentioned is 24 hours; in other words they work continuously, which we suppose they must be enabled to do by the employment of relays of hands. We ought to observe, however, that on the average they all stopped from three to five days in the month. In this they are only closely following our own example: in the two closing decades of last century, and the first 20 years of the present one, when the cotton trade of this country was in its infancy, continuous working was common. It was only abandoned when a sufficient supply of labour to maintain it ran out. This will probably occur in no distant time in Japan, but before that day comes round its influence as a competitor will have been severely felt in more places than one.

Of course, as might be expected, female labour predominates in Japan as well as in the textile trades of this country. In the former part of the year the returns shew that 4,584 females were employed, while in December last the number had increased to 7,500; of males there were in the same periods 1,792 and 3,433. These figures indicate a pretty strong rush to the new industry, which evidently means that

for some cause or other it is highly appreciated. There can be no doubt that the wages offered are relatively high when compared with those earned in the home industries of the country. As long as this state of things exists there will be no failure in the labour supply. The Japs will be quite as ready to forsake their ill-paid native crafts and their jinriashas as ever were the agricultural labourers of this country, or the hand-loom weavers of the hill sides. Now, what are these attractive wages? We are sure they should be of interest to the Lancashire factory operatives, and for their benefit we will transcribe the figures from the official documents. The average daily wage of the male operatives of Japan was, in the early part of last year, 16'87 cents, or a few points less than 8½d. of English money. In the after part of the year it was 17'52 cents, or a point or two over 8½d. The wages for the female workers in the corresponding periods were 8'23 cents and 8'55 cents, or say 4½d. per day.

Now there can be no question of the adaptability of Japanese labour to this industry, nor of its efficiency after a very limited amount of training. Japan is the England of the East, standing in relation to the Continent of Asia much as this country does to Europe. In extent of population it corresponds, and in a striking manner in other respects, while in ingenuity and artistic skill of a type peculiar to itself, it occupies an exalted position. Its artisans may be said to be unapproachable in the excellency and refined delicacy of their work. If they have any competitors in this sphere it is the patient Hindus. With these qualifications the readiness with which they have taken up and mastered the Western methods of industry, and the extent to which they are developing them, constitute a real ground of alarm for the manufacturers of this country, and it behoves both masters and men to carefully take the bearings of this new danger in order to be prepared to make the best of matters when the encounter definitely arises. That this will come at no distant time seems to us a matter of certainty, and the ability of employers and work-people for withstanding the attack upon the positions they now hold will not be improved by the insane folly of the operatives' unions in causelessly harassing their employers and restricting the freedom of trade, as we have had frequently to point out already in these pages. This is a fact that will pass without contradiction from any unprejudiced source. The facts we have stated are such as the leaders of the Associations to which we have referred will do well to ponder over, and we shall be glad to compliment them upon a display of genuine and sound interest in the welfare of their clients when we find them endeavouring to bring them to their knowledge.

A CASE OF TRADES-UNION TYRANNY.

The following information has been supplied to us on the highest authority. At Cornholme, near Todmorden, Messrs. J. Roberts and Son have for several years worked a weaving shed containing 312 looms, and with those engaged in the preparatory processes employed about 130 operatives. All the time they have been in business at this place they have experienced great difficulty in working harmoniously with the local Weavers' Association, that of Todmorden, notwithstanding that they have done everything possible on their part to maintain the most amicable relationship. In the matter of wages, they have always paid up to the standard list of the district. Yet they have been almost continuously

harassed by small petty disputes on the most baseless allegations. These persecutions have recently grown in frequency and virulence, as the following facts will testify. On Whit-Monday the weavers went out on strike without giving the customary notice, on the baseless allegation that the material was bad. They remained out for a week, when the secretary of the Todmorden Weavers' Association came to see Messrs. Roberts "as a peacemaker," and unasked, declared that "the strike was no fault of his." Messrs. Roberts pointed out that the weavers had rendered themselves amenable to prosecution for damages for leaving work without notice. The official asked them to forego any design they might have in that direction and he would make the matter all right, provided they would give him a small sum of money to pacify the weavers. They asked him how much he wanted and he replied that £12 would do. This they declined to give, but promised if the weavers would return to work and work properly for six weeks from the following Tuesday, they would give them £9, and forego their right to retain the wages in hand. This arrangement was accepted, Messrs. Roberts stipulating to pay the money over to any properly accredited person or persons appointed to receive it. The weavers returned to work on this understanding on the morning following. Work was continued up to Monday last. On that day the secretary again made his appearance, apparently calling for the £9. Being asked if this was so, he said "Yes, he supposed it was." Being further asked who had to receive it, he replied he supposed he had. Mr. Wright Sutcliffe then drew his attention to the terms of the agreement, and said the money would be ready at the due time, Thursday noon last. He would require the secretary to call in two weavers from the weaving shed to witness its payment, and hear a statement of what it was for. To this the secretary assented as being proper and fair. He then left, but is known to have stayed in the immediate neighbourhood of the mill until dinner time, when he placed himself in communication with the weavers. A strike immediately followed, the weavers refusing to return to work unless they were paid 1d. per piece advance on the price they were receiving, namely, 6½d. for a T cloth. The latter is the correct price by the standard list. On the following morning, Tuesday last, the secretary again put in an appearance at 7-30 a.m. volunteering his good offices afresh, but was politely told that when his services were required he would be communicated with. Such is a bare outline of the facts of a strike of which we do not remember to have met with the like before. Any lengthy comment upon proceedings such as these would be superfluous, but we should like to ask the weavers of the Cornholme valley whether they consider this is in accordance with the principles of fair dealing? Or are they not rather being unconsciously made tools of to levy blackmail upon their employers? Were they aware of this particular transaction entered into on their behalf by the local secretary? Had he been duly instructed to receive the money on their behalf? Was it owing to Messrs. Roberts insisting that the money should be paid over in the presence of two of them, that led to the arrangement regarding working being broken by them within a few days of its completion? At whose prompting did they suddenly discover that it was the proper thing to ask for an advance of about 15 per cent., though they were receiving the full standard rate of payment? They have left their work

again without notice and forfeited all right to the amount of wages owing to them, whilst they have also lost the gratuity their employers had engaged to give them. In addition, they have rendered themselves amenable to prosecution for leaving work without notice, and to the payment of the damages resulting. All these acts look so exceedingly irrational on the part of any sane body of workmen, that we cannot conceive any sensible men perpetrating them. Will they look round amongst their ranks, and endeavour to discover the blameworthy party? We imagine he could easily be found.

Bleaching, Dyeing, Printing, etc.

COLORIMETRIC METHOD FOR TANNIN.

Dissolve 0.04 grm. potassium ferricyanide in 500 c.c. water, and add to it 1.5 c.c. (about 22 drops) *Liquor Ferri Chloride*. Call this *iron mixture*.

Dissolve 0.04 grm. pure tannin (gallotannic acid), which has been dried at 212° Fahr., in 500 c.c. of water. Call this *tannin solution*.

Exhaust 0.8 grm. oak bark with boiling water, and make it up to 500 c.c. with cold water.

Place six 2oz. clear glass tumblers (or beaker glasses) on a white surface, and in one of them, with a *dropping pipette* (about four inches long and a ¼ in. wide) about half filled, put five drops of the infusion of bark, and in the others with the same pipette (after rinsing), put 4, 5, 6, 7, and 8 drops of the tannin solution. (The drops of the infusion and of the tannin solution must be uniform. The use of the same pipette about half filled ensures that.)

Now add to each, 5 c.c. of the "iron mixture," and in about one minute add to each tumbler about 20 c.c. of water, and within three minutes observe the shades of colour. The number of drops of "tannin solution" used in the tumbler that corresponds in shade of colour to the tumbler containing the infusion of bark indicates the percentage of tannin in the bark, i.e., if it is the one in which seven drops were placed, the tannin strength of the bark is seven per cent.

It is best to observe the shades of colour horizontally rather than vertically, and to hold up the infusion tumbler, with the one which most nearly corresponds, opposite to a white wall, with one's back to the light. The same process is applicable for any substance containing less than 10 per cent. of tannin.

The results are necessarily in terms for commercial gallotannic acid, and not in those of pure tannin, or of the particular tannin in the material assayed.

For substances containing between about 10 and 20 per cent., it is best to dilute the infusion with an equal quantity of water, and proceed as above, using five drops of the dilute infusion, and to obtain the answer, double the result. Thus if the diluted infusion of tea required eight drops tannin solution to correspond, call the percentage sixteen.

For substances containing less than 1 or 1½ per cent., exhaust 8 grm. instead of 0.8 grm., and take one-tenth of the result for the answer. For substances containing more than 20 per cent., as galls, sumach, catechu, etc., dilute the infusion to two, three, or more times its bulk with water, and calculate as above (as with tea), or, otherwise, use 1, 2, 3, or 4 drops of the undiluted infusion in the first glass, and make the calculation thus:—As the number of drops of infusion used is to the number of drops of "tannin solution" (to correspond) so is 5 to the answer—thus: suppose two drops infusion were used and the corresponding tumbler contained 15 drops tannin solution—2 : 15 :: 5—37.5 per cent.

The object in diluting the infusions is because the infusion glass may be of too deep a blue shade. It is better that it should just produce a light blue. The tumblers must be perfectly clear and clean. The "iron mixture," "tannin

solution," and infusion must be freshly prepared and not exposed to the rays of the sun. The water used must be free from iron and tannin.

CHROME MORDANTING OF WOOL.

Dr. Knecht, as the result of his experiments on chroming of wool, shews that the process is not one simply of absorption of the bichromate, but of its breaking up into neutral chromate (remaining in solution), and chromic acid, which combines with a constituent of the fibre in the form of an insoluble or difficulty-soluble chromate. That this is so may be inferred from the following considerations:—1st. If scoured wool be boiled in a feeble solution of bichromate of potash the colour of the solution changes from orange to yellow, and it undoubtedly contains the neutral chromate. 2nd. If a solution of wool in strong hydrochloric acid be diluted with water, and sodium bichromate added, a yellow precipitate containing chromic acid is obtained. An analogous if not identical precipitate is obtained when a solution of lanuginic acid is mixed with potassium bichromate, and probably this precipitate is nearly related to the insoluble combination which in chroming is formed on the fibre.

To meet the possible objection that the formation of chromate might be due to the presence in the wool fibre of salts having an alkaline reaction, a quantity of wool was boiled with an excess of dilute hydrochloric acid, then the acid absorbed by the wool was removed by repeated boiling with distilled water, 5 grm. of it being mordanted, as usual, with 4 per cent. of potassium bichromate. The determination resulted in bichromate remaining in solution, 0.03 grm.; chromate in solution, 0.112 grm.; and chromic acid on the fibre, 0.057 grm. Therefore, the inference is, that the dissociation of the bichromate is caused by the wool fibre.

By combining dioxynaphthalin with sulpho acids of naphthylamin a colouring matter is got that dyes wool an archil red, or chrome-mordanted wool a blackish violet. This can be azotising be converted into a good black.

A NEW Induline colouring matter has been discovered and patented by Meister, Lucius, and Bruning. It is a bluish violet colour, and is the hydrochloride of a basic body, having the formula $C_{21}H_{13}N_4$, and it is obtained by heating aniline, aniline hydrochloride, and amidazobenzene. The acetate of the new induline base is obtained in the form of blue leaflets with a brown lustre. It is soluble in water, and dyes mordanted cotton. This new product is of special interest from a scientific point of view.

INDIGO PRINTING.—Some improvements in indigo printing have been patented by Messrs. Hulme and Waltou. They prepare a solution of indigo as follows:—A solution of bisulphite of soda is saturated with zinc, and then ground indigo is added in the proportion of 1 lb. of indigo to 1 pint of the solution. When the indigo is dissolved there are added three pounds of caustic soda, and as much more zinc as it will take up. Such at least is the description in the provisional specification. According to the complete specification the method of preparing the solution is rather different—1 lb. of indigo ground in water is taken, and 3 lb. of caustic soda are stirred in until the soda is dissolved, when 1½ lb. of zinc powder is added by degrees. When this zinc is dissolved more caustic is added until the yellow solution retains its colour when exposed for five minutes, then more soda and gum is added to form a gummy paste. With the solution so obtained cloth is printed. The printed cloth is exposed to the air to oxidise the indigo; the cloth is passed through water tanks, and exposed to the air until the blue is fully developed, when it is soaped and dried. By padding the cloth in a dilute solution of the above colour, and printing on the colour, dark blue patterns on pale blue grounds can be produced. In neither the complete specification nor in their claims is the use of bisulphite of soda referred to, although, as noted above, it is the solvent agent used in the process described in the provisional specification.

A WRITER in the *Teinturier Pratique* states that on wool mordanted with chrome, 1 lb. of fustic extract gives the same results as 4½ lb. will on alum and tartar-mordanted wool.

ACCORDING to a patent just taken out, rust stains in cloth may be removed by treatment with a mixture made of 15 grms. oxalic acid, 20 grms. tin crystals, 1.5 litres of water, and 50 cc. of a 0.5 per cent. solution of benzoic acid.

BETA-NITROFLAVOPURPURINE is a new yellow colouring matter prepared by nitrating flavo-purpurine, a body related to alizarine. This new product dyes alumina-mordanted fibres a brighter and faster yellow than nitroalzarine, and hence promises to be a colouring matter of some importance.

FULLING SOAP.—A writer in *Roman's Journal* recommends a good fulling soap made with 400 lb. olive oil, 800 lb. bleached palm oil, and 800 lb. tallow. These are melted and then mixed with 1,800 lb. potash lye of 25° Be.; after combination 200 lb. more of the potash lye are added, and the whole is boiled until the mass is quite clear and transparent.

GREEN CHROMING OF WOOL.—In dyeing with some of the so-called adjective dyestuffs, such as certain of the alizarines, it is desirable that the chrome be not fixed on the fibre as chromic acid, but as chromium oxide. This is effected usually by mordanting the wool with bichromate of potash in the presence of tartar, tartaric acid, or oxalic acid. Knecht gives a simpler method of doing this: The wool is mordanted as usual with 3 per cent. of bichromate of potash or of soda, and 1 per cent. of sulphuric acid, and afterwards treated with a lukewarm bath of bisulphite of soda (5 per cent. solution of the ordinary commercial 60° Tw. bisulphite) for 10 to 15 minutes. The chromic acid on the fibre is completely reduced to chromium oxide, much more evenly than with the old process, and the results with such dyestuffs as logwood, alizarine blue, galleine, ceruleine, are much brighter and more satisfactory.

MESSRS. Brown and Gamage have taken out a patent for bleaching and disinfecting clothes and other fabrics. The essential feature of their invention consists in burning bisulphide of carbon in a suitable lamp, the construction of which they do not specially describe. One of the products of combustion is sulphurous acid gas, which, as is well known, possesses bleaching and disinfecting properties. The gas so produced is conducted into large chambers, fitted with shelves on which the articles to be bleached or disinfected are placed, these shelves being so arranged as to cause the gas to pass through the chamber in a zig-zag direction. The clothes, etc., are moistened before they are put on the shelves, where they absorb the gas and are gradually bleached; afterwards they are rinsed in water or soap and water to complete the cleansing. According to the inventors this process is applicable to a great many purposes, bleaching fabrics, disinfecting clothes, preservation of meat, purification of sewage, sterilization and bleaching of hops, etc. As the combustion of carbon bisulphide in lamps has been already in use, the patent would appear to be valid only so far as relates to the use of chambers with shelves.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, JULY 5TH.

The ramie problem excites probably a keener interest in this country than in Europe, numerous though the efforts of the foreign inventors have been for the production of machinery capable of successfully manipulating the fibre. The great fault of the French machines lies in their limited capacity. One of the most efficient of the French appliances took 18 minutes to decorticate 132.8 lb. of green stalks at the Paris Exhibition last year. At this rate, according to the evidence of such experts as Mr. Dodge, of the United States Department of Agriculture, it would take almost 11 days to decorticate the 48,000 lb. that a single acre would yield. Upon this basis it would require about 20 months to handle

the crop of a 50 acre plantation with one machine, or 30 days with 20 machines. The efficiency of a single machine, and the great cost of a plant of adequate capacity, removes the treatment of ramie by such methods from the plane of commercial success. The efforts of American inventors have not resulted in the production of a perfect machine. The Ramie Co. of Philadelphia, which was formed for the purpose of exploiting the Trevenet patents, is about to be wound up. Mr. Chas. Toppan, of Salem, Mass., has devised a method of degumming the ramie fibre when separated from the stalk, but a machine, at a low cost, to work in the green field just as the threshing machine works on wheat, is still wanting, and without it ramie must perforce remain, comparatively speaking, in the background.

The linen question still continues to agitate the minds of the commercial public. A "Linen Importer," who has been discussing the matter in the *Economist*, writes in reply to adverse criticisms, that "we do not object to an American linen industry if it can be done on a basis of fair competition, but we do object if it requires this greatly increased rate of duty. There is no comparison between the silk and woollen industries and linen, because the latter has been established here for nearly thirty years, during which it had a protection of 35 per cent. and yet has not grown, although one manufacturer has been able to exist and make some money on that basis. Now the advocates of domestic linen come forward and demand an increase of 40 to 60 per cent. In doing so they ask the United States Government to guarantee them a larger profit than the average business now pays. We object, therefore, to the attempt to establish and endow a domestic linen industry to this extent for the following reasons:—

"1st. Such a question was not submitted to the people at the last Presidential election. At that time many men who voted for Harrison believed that the tariff should be revised and reduced, but preferred that this should be done by its friends. A still larger number of Conservative men considered that the business of the country was fairly prosperous, and they did not want any change in the tariff because of the uncertainties it would bring. A large proportion of the members of our 'Linen Trade Association' were included in these two classes and the balance were apathetic; having accommodated their business to the tariff as it then existed, they made little or no effort to have it changed.

"2nd. A prohibitive duty on low grades as proposed would throw into confusion the business of importers and dealers in linen goods, and we claim that these men, if they bring into the country good value for the money expended, add quite as much to the wealth of the nation, and are just as desirable citizens, as the domestic manufacturers.

"3rd. The consumer has some rights which ought to be respected. If domestic manufacturers are going to sell their linens as low as the imported goods, where is the necessity for this increased duty? If, as they claim, 'it is only to establish the business,' can you point out any protected industry that is willing to have the tariff reduced when it is established? Is the domestic woollen manufacturer not as much afraid of imported woollens to-day as he was when the business was started, and does he not cry to the Government as feebly for help in the shape of increased tariff as he did when the infant industry was born?"

The expression, "we object," grates harshly on American ears. Have the citizens of this country no right to manage their own affairs, if foreign importers object to proposed tariff legislation? If Europe wishes to influence the mind of American a direction other than that towards which it now tends, it will have to adopt retaliation. If the positions were reversed, and it was United States products that were threatened with a prohibitive tariff wall in Europe, retaliation would be the first remedy that would suggest itself here. Germany and France have already expressed their views in a very forcible manner. England, which is more vitally concerned than any of the Continental nations in the tariff business is strangely silent, owing, no

doubt, to the influence which the doctrines of unrestricted free trade still possess in that "solitary citadel" of Cobdenism. We can stand this sort of thing just as long as anyone, and if England will go on buying our products in increasing quantities and allowing us to bar out her own it is all right. Nobody here will complain.

The bulk of our exports is composed of four items—cotton, wheat, meat, and petroleum. Our cotton seems to be firmly entrenched, but it is not beyond the possibility of danger from India, Egypt, and Central Asia, if those countries were encouraged by fiscal discriminations. Our meat products have already suffered heavily from hostile tariffs and pretended sanitary regulations. Our wheat and petroleum are fighting a doubtful battle against competitors that are crowding them closely, even in neutral markets. Suppose the British consumer were required to pay a duty of 30 cents a bushel on American wheat, when he could get Indian or Russian wheat free, which would he take? Or suppose the American farmer consented to deliver his grain, duty paid, at the same price at which the untaxed competitor delivered his, how much profit would he get out of the transaction?

Designing.

NEW DESIGNS.

SATEENS AND THEIR DERIVATIVES. (Continued.)

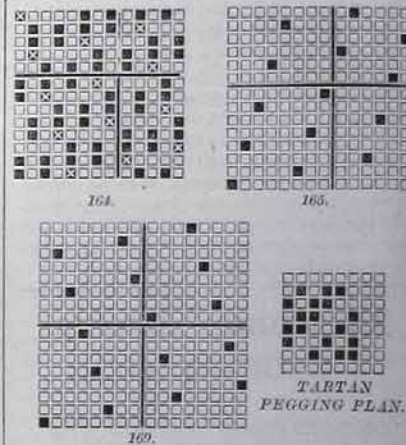
Before leaving the 10-end sateen makes, it may be well to point out what useful weaves they are, either for using alone or in weave combinations in conjunction with fine worsted yarns. *Design 144*, for example, gives a very nice fine twill with about 2/56's worsted finely set, and is also equally valuable for using with other 10-end derivatives in very much the same manner that the 8-end buckskin weave is used, so that altogether the 10-end sateen makes are exceedingly useful.

In *Designs 150* and *151* the 11-end sateen is shown. In *150*, 5, 6, 9, 2 may have been counted, and in *151*, 7, 4, 3, 8 may have been counted. In *Design 152* dots have been added to ascertain the direction of the twill, which it will be noticed is here evidently suited for warp, it being necessary to turn the plan round if a weft twill is required exactly the same as a warp twill. Notice should also be taken of the fact that *Design 152* proves that there is only one complete twill either from right to left or left to right. *Designs 153* and *154* are two derivatives of the 11-end sateen, the first being a broken-up make and the second a species of twilled hopsack.

Designs 155–159 demonstrate the construction and use of the 12-end sateen. It will be found that *Design 155* contains all possible bases, since 12, being an even number, excludes the use of most of the numbers. *Design 156* demonstrates that there are two complete twills from right to left, and *Design 157* demonstrates the fact that there are three complete twills from left to right; thus it is very evident that a great variety of designs can be originated on this basis. Note also that taken either from right to left or left to right, the 12-end sateen coincides with regular twills running at an angle of 45 degrees. In *Design 158* four dots are filled in round every other sateen spot, while in *Design 159* two dots are filled in first on one side and then on the other of the sateen, dots forming one twill, thus shewing the variety of ways in which this sateen may be added to.

Design 160 has been formed in a manner similar to *Design 141*, the 12-end sateen being put down for 48 threads and picks; then two sections of this have been left warp twill, and the two other sections have been converted into weft twill. Only 24 shafts have been required, and the checks may be enlarged as required without the addition of extra shafts. This system of figuring should be tried in the smaller sateen makes.

Designs 161, 162, and 163 shew the various forms of the 13-end sateen, each of which is useful as a base to construct smaller makes on.



The well-known and much-used 13-shaft corkscrew is given in *Design 164*; the dots which shew how it has been obtained should be left out. Numerous modifications of this make similar to some we have already given in this journal will be suggested by the principles we have been endeavouring to explain, which should prove very useful. It will be noticed that in this make there is only one continuous twill, taken either way.

In *Design 165* the 14-end sateen is given; in *Designs 166* and *167* the 15-end sateen is shown, and in *Design 168* the 16-end sateen is shown.

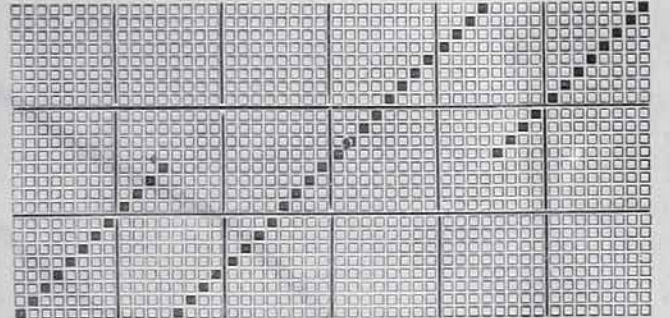
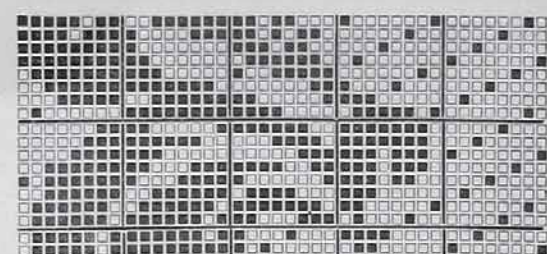
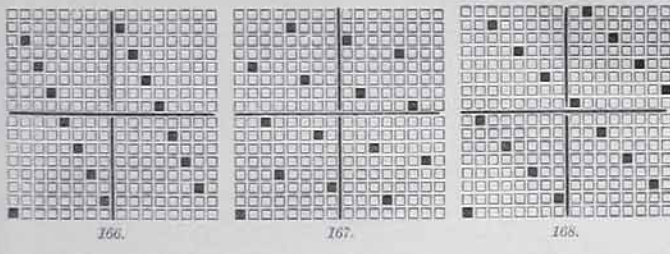
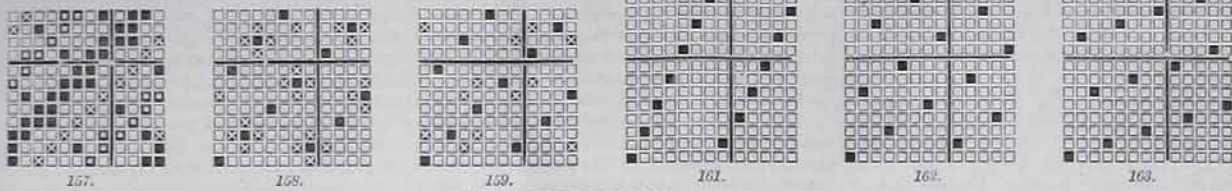
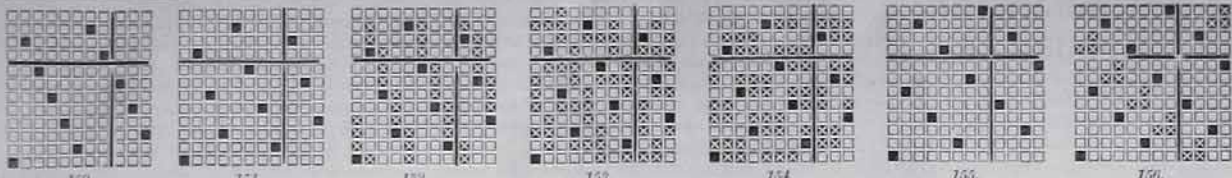
These makes are, of course, too open for using in their unadulterated state, but they are exceedingly useful for the effective weaves which may be derived from them on the principles indicated.

FANCY DRESS STRIPE.

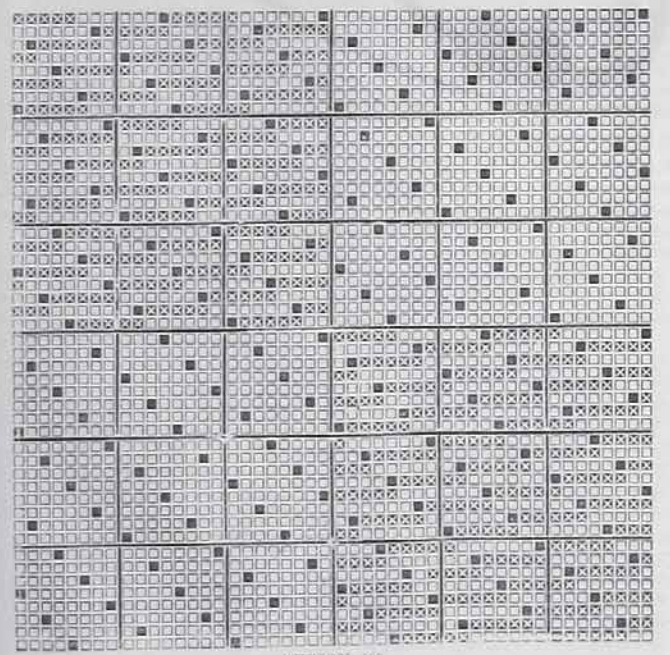
This design gives a figured stripe on a seven-shaft satin ground *A*, and a smaller stripe *B*, a seven-shaft satin only. The patterns are merely suggestive. Both stripes may be of an equal number of ends, and both bleached white, or one white and the other (or figure) dark blue; the weft white or a very light tint of primrose, pink, or maize; the weft forming the figure should either be spun silk or 40's two-fold highly polished cotton; the warp very close set, 40's twist, the main object being to conceal the weft as much as possible on the *B* stripe and to freely exhibit it on the *A* stripe, because a good sharp contrast of figure and colour is needed to create a proper effect for drapery or the clinging folds of a dress or skirt. It is quite evident that this make of cloth permits of any amount of changes in warp and weft counts, reed, picks, and colourings; linen, silk, worsted, and cotton may be used as warp and weft, or warp all cotton and weft any of the other materials. The ground need not be confined to a seven-shaft satin; a five, eight, or nine-shaft can be used with advantage. We have given a few of the satin ground dots under the figure to shew that the angle is the same as the *B* stripe.

ZEPHYR TARTAN.

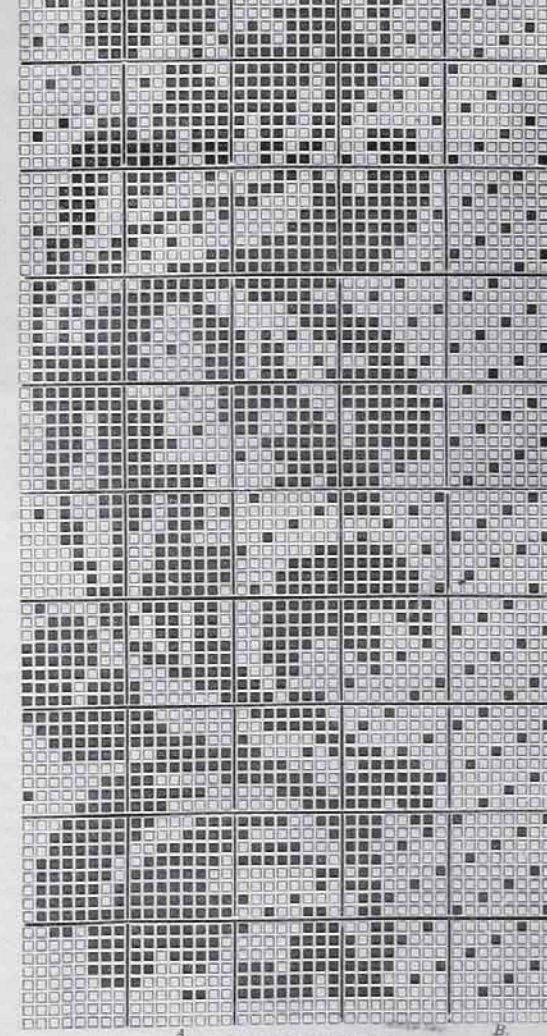
On six shafts, straight over draft (see pegging plan), 50 ends per inch of 36's twist for warp, 12's for weft, 40 picks on an inch. Pattern of warp: 6 dark brown, 14 lichen green, 4 dark brown, 14 lichen green, 8 dark brown, 14 imperial blue, 2 dark brown, 2 white, 10 dark brown, 2 white, 2 dark brown, 14 imperial blue; total ends in pattern 92. The weft being coarser by 1/2 than the warp material and the picks less in number per inch than the warp ends, the checking will not be in union with the pattern now given, but a more or less square effect will be obtained by 4 dark brown, 10 lichen green, 4 dark brown, 10 lichen green, 4 dark brown, 10 imperial blue, 2 dark brown, 2 white, 6 dark brown, 2 white, 2 dark brown, 10 imperial blue. Total picks in checking 66. It is not positively necessary that this order of checking should be followed, because blue may take the place of green, and green the place of blue, and yellow that of white.



DRAFT FOR DESIGN 169.



DESIGN 169.



FANCY DRESS DESIGN.

B.

Machinery and Appliances.

THE BOLTON BOTANY WOOL SPINNING COMPANY.

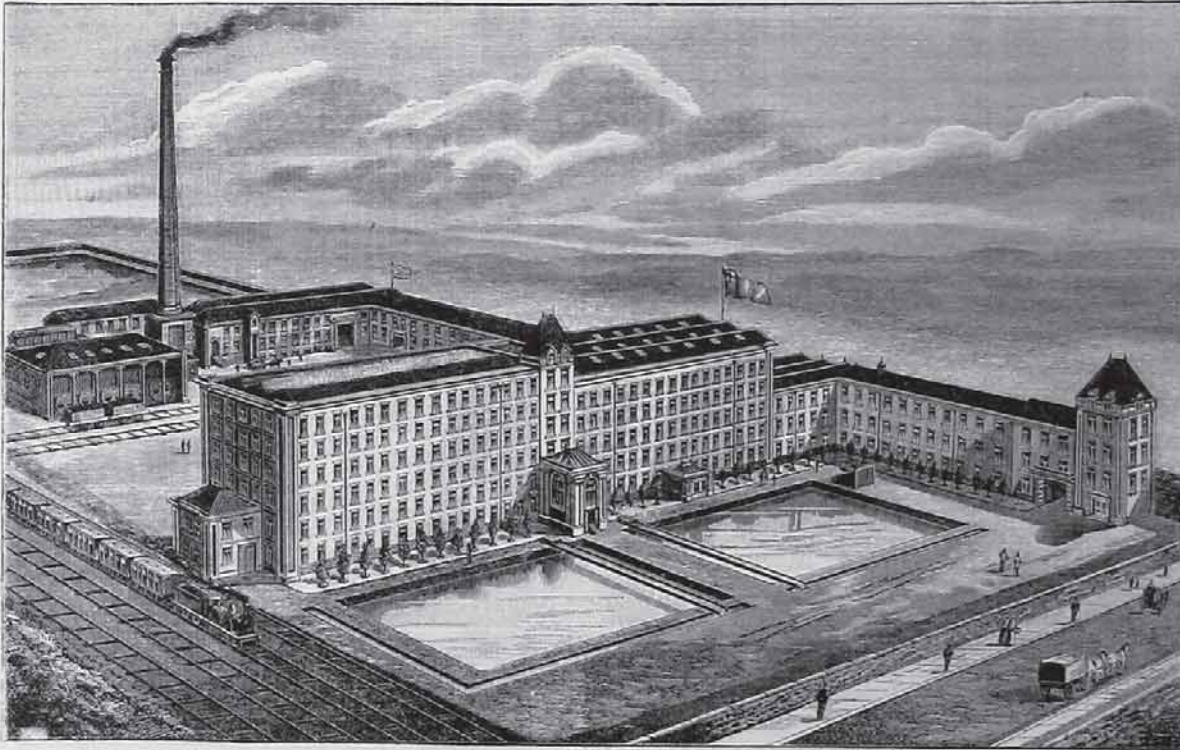
ANOTHER NEW INDUSTRY FOR BOLTON.

We have already more than once drawn attention to the rapid extension of the hosiery trade in several districts of Lancashire, and particularly in Bolton. This movement steadily continues, and bids fair to develop the most important results. One of these is already becoming visible in the foundation of another new industry in Bolton, one which is peculiarly the outcome of the new hosiery trade. The Rothwell Hosiery Company, Limited, has so

to take a leading part in the promotion of the Bolton Botany Wool Spinning Company, which has been founded mainly with a view to produce the worsted yarns required by the former company, and to afford them ready facilities for the production and variation of the numerous descriptions of yarns they require, owing to their rapidly expanding trade.

It cannot be doubted that the Rothwell Hosiery Company were fortunate in their original location being in Bolton, and especially in connection with the new venture of fine worsted spinning. In the first place, the labour supply consisted of girls who had, to a more or less extent, been familiar with machinery from infancy, if indeed it could not be said for them that they possess a hereditary power of readily comprehending its intricacies. Hence, though the various kinds of hosiery machinery were in the

they have a floor space of upwards of six acres. Another measure of their magnitude is the fact that the cost of their erection was £20,000. Having, by the acquisition of these splendid premises, thus obviated the loss of time that would have taken place had it been necessary to erect them, the company at once set about the task of furnishing them in the best manner. Messrs. Hick, Hargreaves, and Co., the eminent engineers, of Bolton, were instructed to supply a pair of horizontal engines capable of developing 1,000 horse-power, and from an inspection of the one which has already been delivered and commenced work, it would be obvious to the merest tyro in these matters that this contract has been placed in excellent hands. The Company being determined to have everything of the best, and to start in a line with the most advanced posi-



VICTORIA MILLS, BOLTON.—THE BOLTON BOTANY WOOL SPINNING COMPANY.

rapidly extended its operations, owing to the favour with which its productions have been received by the public, that it has been thought advisable it should have under its control a wool-spinning establishment, which would ensure it the complete command of the quality of its productions from the wool "top" to the finished article. Besides this, such facilities would enable it to develop specialities with a facility quite unattainable when yarns have to be purchased from independent spinners. It will be obvious to the reader that those who come most nearly into contact with the consumers are those most likely to obtain the earliest and most accurate knowledge of the direction in which their tastes are moving, and are therefore most likely to produce acceptable articles with the least risk of making mistakes. The Rothwell Hosiery Company having a large staff of travellers in direct touch with retailers over the country, have felt their advantage on the one hand and their disadvantage on the other. The latter has led them

main very different from those of cotton spinning, they readily acquired the knowledge necessary to work them with facility. In the spinning of fine wool there was so much analogy between it and that of cotton spinning that the operatives in the latter trade only needed two or three days' experience of the former to render them quite competent hands. Thus nearly all the difficulties usually encountered in founding a new industry were luckily obviated by the circumstances of the locality in which it originated.

The Bolton Botany Wool Spinning Company, having been formed under these excellent auspices, which to a large extent guaranteed a market for its productions, was duly incorporated. Its next step was to secure suitable premises in which to conduct its operations. These were found in the extensive Victoria Mills, then vacant, and admirably adapted for the use to which it was desired to put them. These mills, as will be seen from the accompanying illustration, are six storeys high, and

tion of the day, decided upon using the electric light for purposes of illumination. In consonance with this idea, they placed a contract to fit the mill with 1,000 electric lights with Messrs. Ernest Scott and Co., electrical engineers, of Newcastle-on-Tyne, and that firm has executed its contract as far as the present furnishing of the mills with the machinery will admit. Two large dynamos, one of which is already in position and at work, will supply the necessary electricity. Rapid progress is being made to fit every portion of the mills for the reception of the machinery designed to be placed therein.

What is called the French or dry process of spinning was, for satisfactory reasons, decided upon. These reasons were mainly that, as knitted fabrics in their various forms have so often to come into contact with the person of the wearer, it was desirable that they should be soft, light, soothing to the touch, clean, bright-looking, brilliant in colour where colour is introduced, easy to wash, and with the

least liability to "mill" up in that delicate operation in connection with fine articles composed of wool. Considering the fact that one-half of the human race consists of the female sex, and that their physical systems are composed in the main of much finer and more sensitive material than their male relatives, and that it was and is a leading object of the Rothwell Hosiery Company to specially study their requirements and to win their support, and, further, that the French system referred to yields the maximum of these desirable qualities yet attained, it became practically a necessity, from a business point of view, that this system should be chosen.

In this system the wool passes through 19 processes from the raw material to the finished article. It is not necessary to do more than enumerate most of them, but this it is desirable to do in order that in the Lancashire districts, where this is a new industry, it may be seen wherein it differs from that of cotton. They are as follows:—1st, carding; 2nd, balling; 3rd, lap forming; 4th, combing; 5th, balling again; 6th, back-washing, and balling again; 7th, 8th, 9th, passages through screw gill balling machines. Up to this point the object has been to thoroughly cleanse and arrange the fibres of the material in parallel order, and to secure a perfectly even sliver or strand of wool fibres loosely compacted, and of about an inch in diameter. The next nine processes are mainly for the purpose of attenuating this strand into the dimensions desired for the yarn into which it is proposed to spin it in the next and, so far as the spinning process is concerned, the final stage. The main difference between the French and English systems of spinning, is the avoidance of the use of oil in the later stage in the French. This necessitates the material passing through a few more processes, but the result is that a yarn is obtained which will make a softer, less compacted fabric than by the English system, in which the use of oil tends to lay the fibres of the wool more closely together, producing a comparatively wiry yarn and a hard fabric, which, in this instance, are not nearly so suitable for the required purposes as the soft ones resulting from the former.

The worsted trade is divided into three great divisions: 1st, wool combing, which takes the material from the hands of sorters, and deals with it until it reaches a marketable form in the shape of tops; 2nd, worsted spinning, the spinner usually purchasing tops and putting the material through the processes necessary to transforming it into and finishing with yarn; and 3rd, the manufacturing processes of weaving it into cloth, or otherwise, as in this case, transforming it into a thousand useful articles on the knitting machine.

The Bolton Botany Wool Spinning Company occupies a place in the second division, being what is termed a worsted spinning establishment. Its raw material consists of "tops," and its processes commence about the 7th of the stages named above. The wools used are natural browns, white, and dyed, and these are blended in the gill-boxes in any desired ratio to produce the beautiful effects seen in fancy hosiery wares and knitted garments. After the proper admixture has been obtained, the attenuation of the sliver commences in the drawing processes. These in principle are all alike, but differ in details in a very interesting manner. To attempt to describe them in this respect, however, would be to incur the risk of becoming very tedious. As in the cotton processes, twist is kept out as long as possible, and is only introduced when the material would not otherwise hold together. In the final stage of spinning,

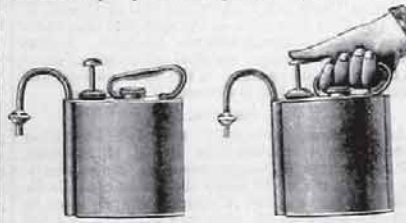
it receives all that it is intended to have. There is a great likeness between the machines of a worsted spinning system, from the drawing-frames onward to the mules, each being the same machines with the special modifications to render them suitable for dealing with a fibre so different in its nature as cotton is from wool.

The mill when fully equipped will contain about 50,000 spindles, all (with the preparatory machinery) supplied by Messrs. Platt Bros. and Co., Limited, Oldham, being the spinning portion of this firm's fine series of machines for combing, preparing, spinning, and weaving worsted upon the French system, which has done so much to restore prosperity to our worsted manufacturing districts.

The venture of the company is a bold one, but is thoroughly justified by the conditions in which it has been founded, by the antecedents of its promoters and conductors, and by the prospects of success that lie before it. Under the able generalship of Mr. Rothwell, and the skilful management of Mr. Ainsworth, with an outlet for the bulk of its productions practically guaranteed, it seems to possess every element that should result in a brilliant success. On the ground that it is almost a novelty in Lancashire industries, we have every pleasure in wishing that it may realise the highest expectations entertained of it.

A NEW OILER.

The accompanying illustrations shew a new oiler of an ingenious construction, which has been invented and placed on the market by Messrs. E. Jagger and Co., Werneth Metal Factory, Oldham. Its purpose is to supply oil in measured or suitable quantities to spindle chambers of ring frames, for which it has been specially designed, and other like receptacles, without the waste that takes place under the methods usually adopted. At present, when lubricating the footsteps by the unregulated appliances in



use, it often occurs that double the quantity of oil is discharged that is needed, and that half of it runs to waste. The operative engaged in the duty of oiling, if he endeavours to avoid this, very likely falls into the opposite fault and only half charges some of the receptacles, thus incurring the danger of many of them running dry before the time of lubricating them comes round again. There is also at some places in use a small measure, which is used to fill the chamber. This entails the using of both hands, is liable to have its contents spilled, and also takes up a great deal of time in getting through the work. By means of the new oiler, the method of using which is shewn in Fig. 2, all this can be avoided, and the quantity required be accurately supplied. The oiler is furnished with an inner cylindrical chamber, in which a plunger is inserted, attached to the finger-piece. When the latter is pressed down it discharges a given quantity of oil from the cylinder, thus filling the receptacle. The pressure of the finger being removed, a spiral spring presses it up again, which permits a fresh supply of oil to flow into the cylinder from the can, when it is aga-

ready for discharging. The quantity of oil discharged can be increased by lowering the plunger, which is done by screwing it down, and can be decreased by screwing it upwards.

Spinners will find a double economy in the use of this novel oiler, namely, by preventing, on one hand, the wear and tear that results from imperfect oiling, and on the other by avoidance of the waste that too often takes place under the present system. The makers, addressed as above, will be pleased to answer any inquiries.

THE SQUARE HOLE DRILL.—A feat in mechanics has just been accomplished by the production of a machine by means of which square holes can be drilled in metal. Hitherto it has only been possible to drill round holes, but now square holes and, in fact, holes of complex geometrical outline can be drilled, as easily as circular holes. There are two machines for effecting this object, one of which will only drill either round or square holes, but the other one will drill holes of any shape. The first of these is the Ainley-Oakes drilling machine, which in appearance resembles an ordinary drilling machine. It has, however, a spindle composed of three concentric parts, upon one of which is a set of cams so arranged that each cam, when brought into combination with the part in which it works, produces at the cutter a hole of a given size, each cam producing a different-sized hole. In other words, in cutting a square hole the toe of the cutter describes a square. It is not possible without drawings to make the arrangement clear, but it may be stated generally that the mechanical details, while very ingenious, are very simple, and the results very satisfactory. The second machine is the Tyler-Ellis drill, which is an outcome of the previous apparatus. In the Tyler-Ellis machine the spindle moves about the centre of a ball joint, and by an improved arrangement of the working parts holes of any conceivable mathematical outline can be drilled. Another point of advantage in the Tyler-Ellis drill is that it cuts clean angles in the square holes, whereas the Ainley-Oakes drill leaves a slight filling of metal in the angles, which have to be cleared out after the hole has been drilled. It is curious to watch the machine forming a four-sided hole in a plate of metal, but it does it in a very practical and effectual manner. The value of these machines will be found in engineering workshops and ship-building yards, where great numbers of square holes are constantly required to be made in various parts of machinery, and would be much more frequently made were the means at hand for forming them. It is stated that the cost of drilling square holes is no greater than that of round ones, although up to the present time the cost has been as 1 to 36—that is to say, a square hole has hitherto cost 36 times as much as a round one to make. A demonstration was given on Wednesday by the Ainley-Oakes Square Drill Syndicate at 2, New Broad-street, London, when both drills were successfully put through their work.

COOLING WATER ON A LARGE SCALE.—About a year ago plans of a large iron structure which is intended to cool the water in the reservoirs with which the engines of the Paisley thread mills of J. and P. Coals are supplied, were prepared by Mr. Motion, engineer to the firm, and the work of erection has now been completed. The horse power of the engines used in the Fergulie factory amounts in all to 10,000, necessitating a very large supply of water for condensation purposes. Owing to the overheating of that in the reservoir, which was sometimes as high as 100 degrees, an insufficient vacuum was created in the condensers, and the working of the machinery was thus hampered. By this new system, however, the temperature of the water will be much reduced, and cooled sufficiently to supply engines of an additional 2,000 h.p. The cooling frame rests on concrete piers placed 50 feet apart in the western section of the reservoir, and is constructed of wrought iron in girder form, 635 feet long by 24 feet wide and 30 feet high. It is unequalled in this country, and unsurpassed throughout the world in magnitude. The discharge water from the whole of the engines flows into a receiving well to the east of the old canal bridge, and is forced by four double-acting pumps through a 36-inch pipe to the centre of the frame, whence it is drawn up into a receiving tank. From this it escapes through sluice boards on each side into troughs fitted with sprinklers, which spread the water. It then passes over stages of lathwork, and is split up into small particles, so that the air affects it thoroughly before it falls into the reservoir. An engine-house has been erected adjacent to the receiving well, and in

it, with the above-mentioned pumps, are two pairs of compound inverted receiver engines, with high pressure cylinders 19 inches in diameter and low pressure 32 inches in diameter and three feet stroke. The quantity of water dealt with is 3,000 tons per hour, and the effect of the cooling frame is to reduce it in temperature by something like 40 degrees. The total cost of the undertaking was £10,000, and the weight of the frame is 260 tons. When in operation the cooler presents a strange appearance, the whole structure being enveloped in steam, while the water is seen rushing along the top and falling through the lathwork like heavy rain.

News in Brief,

FROM LOCAL CORRESPONDENTS AND
CONTEMPORARIES.

ENGLAND.

Blackburn.

At the Blackburn County Court, Mr. R. W. Rylands (Messrs. Boote and Edgar, Manchester) applied to His Honour Judge Coventry for the discharge of Mr. Joseph Noble, of the late firm of Messrs. Walsh and Noble, cotton manufacturers, Commercial Mills, Blackburn. When Noble in November, 1887, entered into partnership with Walsh, and bought the Commercial Mills, he had a successful business as a yarn agent in Manchester. The mill cost £5,000, but they had no capital, and the purchase money was paid by instalments. The mill was not a success, and in the following year a petition in bankruptcy was filed, the deficiency being £2,293 14s. Walsh managed the mill and His Honour said Noble chose to leave the business in the hands of a man he knew very little of, and allowed it to go on, careless whether it was good or bad. He seemed to have been guilty of great recklessness, and he should have to suspend the bankrupt's discharge for a year.

Bradford.

According to the report just issued by General John C. New, Consul-General of the United States at London, the value of the exports from the Consular district of Bradford to the United States for the quarter ended March 31st, 1896, was 4,609,677 dollars. Consul Tibbits reports that the exports for the quarter ended June 30th amount to 6,577,635 dollars, an increase of over 1,900,000 dollars as compared with the previous quarter. The exports for June were the heaviest ever recorded in a single month in the Consular district, exceeding those of any previous month by more than £127,000. The increased exports to the States during the last quarter were doubtless owing, in large measure, to a desire to anticipate the passage of the McKinley Tariff Bill.

Mr. Christopher Rawson, F.I.C., F.C.S., analytical chemist, of this town, and late head master of the Stockport Technical School (Dyeing Department), will succeed Dr. Knecht as head master of the Chemistry and Dyeing Department at the Technical College. The following results of the technological examinations conducted by the City and Guilds of London Institute are to hand:—Wool and Worsted Spinning.—Honours: First class, Walter Grayson (who gains the Clothworkers' Company's first prize of £3, and the City Guilds' silver medal), E. B. Fry (Clothworkers' second prize of £2 and the City Guilds' silver medal), and C. E. Holdsworth; second class, Fred Firth. Ordinary Grade: First class, J. S. Fearley; second class, C. Weberling. Wool Dyeing.—Honours: First class, J. W. Cunliffe and Roger Pole; second class, G. M. Hunton and E. E. Mines. Ordinary Grade: Second class, F. W. Burgess and S. J. King. Cotton Dyeing.—Ordinary Grade: Second class, Paul Greeff.

Barnoldswick.

Space in Well House Shed has been taken for 400 looms by Messrs. Moorhouse and Hartley, of Earby.

Bury.

There has just been placed in the transept of Christ Church, Walmerley, a marble tablet, erected by the workpeople of Mount Pleasant Cotton Mills, in memory of the late Mr. John Howarth, who for upwards of 30 years was manager at these mills, as a memento of the esteem in which he was held by them.

Burnley.

The proposed uniform list for the weaving trade was under discussion for two hours on Saturday last at a meeting of the General Council of the Northern Counties Weavers' Association held here. Nothing, however, was done, the question being adjourned for another fortnight, when the Council will meet at Blackburn.

Cleckheaton.

A meeting of the Cleckheaton Chamber of Commerce was held on Wednesday evening at the Coffee Tavern, Mr. B. H. Goldthorpe, the president, in the chair. The president made a few remarks in explanation of various paragraphs which had appeared in the local papers respecting the proposed invitation by the Chambers of Commerce in the heavy woollen district for the Associated Chambers to hold their annual meeting at Harrogate. Alderman Firth had written asking if the Cleckheaton Chamber would contribute £250 to the expenses which would be incurred by the visit, but he could not see how they could contribute more than the previous offer they had made of £100. This year it was proposed that the meeting should not be held, however, as Parliament in November, and there would naturally be great difficulty in getting prominent gentlemen of the Associated Chambers together. Next year they might invite the Chambers to hold their meeting in the West Riding, if only to repay the hospitality which had been offered and accepted in other parts of the country. The secretary having stated that, basing it on the ratable value, Cleckheaton's share would only amount to £70 or £80, the subject dropped.

Colne.

The work in connection with the erection of the Viaduct Weaving Shed, Primet Bridge, is progressing as rapidly as possible. When completed the place will hold from about 800 to 1,000 looms. About two-thirds of the room and power have been let to a Portuguese gentleman, who is at present running a number of looms at the Trawden Mill Company's Weaving Shed, Trawden. When the Viaduct Shed is ready, it is stated that he will remove all his looms and machinery there.

Darwen.

At the ordinary quarterly meeting of the local Weavers' Association, Mr. John Aspin presiding, after the statement of accounts had been read, the retiring directors were re-elected. The question of steaming in mills was then discussed, and it was recommended that members who had any complaint to make in reference to excess of steaming in mills should bring it before the Weavers' Committee, who would decide as to what course to adopt.

Dewsbury.

A fire broke out on Wednesday in the top storey of Messrs. Porritt, Senior and Co.'s mill at Savile Town. Some of the operatives had to make their escape by means of a chain outside the building. The brigades of Messrs. Oates and Blakely and that of Messrs. E. Fox and Sons were soon on the spot, and afterwards the Dewsbury Borough Brigade attended. A great portion of the damage, which is estimated at about £1,500, was done by water to the raw material and machinery. The loss is covered by insurance.

Halifax.

An accident, unhappily attended by rather serious results, occurred to Mr. H. H. Bowman, J.P., of Halifax, on Sunday evening. He was walking through the woods below the Rocks near Savile Park in order to attend a country chapel, when he trod on a stone which gave way suddenly, and fell heavily on his left side, fracturing the pelvic bone. Some time elapsed before assistance could be procured, during which he was found by his nephews, the sons of Dr. F. H. Bowman, who were thus enabled to render very timely assistance. Mr. Bowman was conveyed to the Infirmary. His injury, though serious, is not dangerous, but it will probably confine him to the house for several weeks.

Hasingden.

The Heap Clough Cotton Manufacturing Company are extending their premises so as to find room for additional looms.

Hebden Bridge.

The half-yearly report and balance-sheet of the Hebden Bridge Fustian Co-operative Society has just been issued, from which it appears that the sales for the half-year amount to £17,642 1s. 5d., being an increase of £1,205 17s. 1d. over the corresponding half of last year. Nine societies have been admitted, making the present number 669. After allowing £363 9s. 3d. for depreciation, the profit and loss account amounts to £1,659 4s. 11d., which is increased in the profit and loss account to £1,730 6s. 3d. This it is proposed to divide as follows:—Dividend on A Shares at 5 per cent. per annum, £411 12s. 6d.; ditto on B Shares, £85 16s. 2d.; ditto on W Shares, £22 11s. 6d.; members' purchases at 9d. in the pound, £438 15s.; non-members' purchases at 4d. in the pound, £38 17s. 4d.; labour at 9d. in the pound, £198 9s. 3d.; amount to education fund, £30; ditto to reserve fund, £200; ditto insurance, £200; balance carried forward.

Hollinwood.

The workpeople at Messrs. Alfred Butterworth and Son's, Globe Mills are about to present to their employers an illuminated address, as a token of their respect and esteem in which they are held by them. Messrs. Platt Bros. and Co., who have secured the order for machinery at the Richmond Mill, have commenced to deliver some.

Leigh.

The Weavers' Union which was formed in Leigh some months ago has now got nearly 1,000 members.

On Saturday morning a breakdown occurred at Stanley Mill Weaving Shed. One of the rods belonging to the engine broke, and work had to be suspended until Monday morning.

The Leigh Co-operative Weaving Shed has been let to Messrs. J. Bancroft and Co., cotton manufacturers, Todmorden, for a period of 10 years. The Society have, we understand, promised to spend £3,000 on new looms, and Messrs. Bancroft are expected to take possession in a week or two.

London.

The Scottish Home Industries Association have been holding a sale of their goods—Ayrshire embroideries, Shetland woollens, tweeds from the Hebrides, and so on—at the residence of Lady Hayter, Grosvenor Square. Among the ladies conducting the sale were the Countess of Rosebery, Lady Campbell, Lady Scott of Harris, Mrs. J. A. Baird, Mrs. Vernon, and Mrs. Lyell. The society have a permanent depot for their goods in Grosvenor Place, whence Her Majesty the Queen ordered a supply of the work furnished by the association a few weeks ago.

Manchester.

The death is announced of Mr. James Worrall, head of the firm of Messrs. J. and J. Worrall, Limited, bleachers and dyers, Ordal Lane Mills, Salford. Mr. Worrall, who was in his 61st year, was a justice of the peace for the borough of Salford and for the Hundred of Salford. He was also Mayor of Salford for the year 1861-2.

In London, on Tuesday, a sale of silver plate took place at Christie's, when, amongst other articles, a handsome centrepiece, with foliage branches for six candles, and three figures of boys, representing music, painting, and sculpture, was offered for sale. It had on it this inscription: "Presented to James Dillon, Esq., in commemoration of his long and valuable services, extending over more than a quarter of a century, and as a token of the estimation and friendship in which he is held by the firm of Butterworth and Brooks, Manchester, June, 1861." It weighed 288 oz., and was sold at 4s. 6d. per oz., or about £265.

At the final meetings of the Executive Committee and Guarantors' Council of the Royal Jubilee Exhibition, Manchester, held prior to their dissolution in December last, the following gentlemen were appointed trustees to hold the surplus funds until all outstanding claims were adjusted, and to hand the net balance over to the Whitworth Institute, viz.: Sir Joseph C. Lee, Messrs. C. J. Galloway, Oliver Heywood, and William Agnew. A meeting of the trustees was held on Wednesday at the secretary's offices, when a final statement of accounts was submitted, showing the net cash surplus to be £41,942 18s. 11d., or, together with the value of certain assets not realised, and which have now been handed over to the Institute, £43,492 18s. 11d. A cheque for this amount was drawn and handed to Mr. Oliver Heywood for presentation at the meeting of the Institute to be held on Thursday last. The affairs of the exhibition were then declared to be finally closed.

The Whitworth Institute was, on Thursday, formally established and organised. The first meeting of the Governors was held in Grove House, Whitworth Park, under the presidency of Sir J. C. Lee, when a report and balance-sheet was presented by the Committee and adopted. Officers were elected (Mr. Chancellor Christie being the first president), after which the President and Governors proceeded to a temporary building, where a large number of invited guests, ladies and gentlemen, were assembled to witness the formal transference of the property given by the Whitworth Legatees to the Institute. This having been done, a cheque for £43,492 18s. 11d. was handed to the President by Mr. Oliver Heywood on behalf of the Royal Jubilee Exhibition Committee, which sum represented the surplus receipts resulting from the Exhibition. Included in the amounts were the cost price of certain exhibits—Indian screens and silk fabrics—which were in the gift of the Committee. The picture by Mr. G. F. Watts, R.A., "Love and Death," was handed over, on behalf of the artist, by Mr. William Agnew. The several gifts, as also a loan collection by Sir C. Robinson of mediæval tape-

tries, etc., were cordially acknowledged. Amongst those present who took part in the proceedings were the Marquis of Hartington, the Mayor of Manchester, and the Bishop of Manchester. In the evening the Mayor gave a banquet in celebration of the event. Replying to the toast of "Success to the Whitworth Institute," the Marquis of Hartington referred to the conditions upon which this country maintained her commercial supremacy, and remarked that the lessons of history taught us that a position of that kind was liable to be lost by the force of altered circumstances in industry and commerce. But while human wisdom and foresight might be unable to provide against such a contingency, he strongly urged that we should greatly add to our natural advantages if we combined more and more in our educational system the training of the hand with the cultivation of the mind. Sir Frederick Leighton also replied to the toast.

Oldham.

Preparations are being made at the Hey Spinning Company's mill for placing in sprinklers.

The steam engines of the Ruby, Beal, and Richmond are expected to be completed this month. Machinery is also being got into the latter mill.

The assistant secretary of the Oak Spinning Company has been promoted to the position of salesman, as well as that of secretary.

It is stated that Mr. Joseph Stott, of Oldham, has been appointed architect of the new mill proposed to be built by the Peel Mill Company, Bury.

We notice that Mr. J. W. H. Beech, engineer, Oldham, is a promoter of the Apeothorne Mills Company, Limited. Mr. F. W. Dixon, Oldham, is preparing the plans for the alterations of the proposed new structure.

It is reported that Mr. Thomas Henthorn, salesman of the Moorfield Spinning Company, has been appointed to a similar position at the Beal, of which he is a director. Mr. Henthorn is also chairman of the Cotton Buying Company.

In addition to putting in new cylinders, other alterations are being carried out in connection with the steam engines at the Hey-lane Mills, Lees. The work is being carried out by Messrs. Buckley and Taylor.

The steam engines of the Beal Mill Company are in an advanced state of completion, and the machinery is also being erected as quickly as possible, a fair quantity having now been set up. Spinning operations are expected to be commenced in a very short time.

At the meeting of the Melbourne Mill Company, on Monday evening, Mr. S. Buckley (the chairman) stated that the directors were making every preparation for carrying out the alterations in the widening of the mills, so as to bring it up to modern requirements, and while the work was being carried out it would be required to stop one of the mills.

At the meeting of the Melbourne Spinning Company, on Monday evening, Mr. Joseph Domakin (manager of the Central Mill Company), was elected a director, supplanting Mr. John Dorman (sharebroker), who was appointed an auditor in the position vacated by Mr. James Cheetham (secretary of the Commercial Mills Company).

A private meeting of a number of gentlemen has been held, with the view of floating a company for the purpose of building a mill on land situate in the south-east part of the borough. Probably more will be heard of it shortly. There is also a talk of another new mill at Orompton, to be built not far away from the Beal and the Elm, but it has not yet assumed practicability, although a local gentleman has promised to give it a good lift.

At the West End Spinning Company's meeting on Thursday evening, the Chairman of the Board of Directors, Mr. S. Buckley, of Didsbury, in alluding to the state of trade, said it had sadly deteriorated since the beginning of the year. What the remainder of the year would be like it was impossible to predict, as cotton seemed to be influenced by such a variety of causes. But he did not think it would seriously affect the company, as they were considerably well bought and sold for some months ahead.

For some time the directors of the Sun Mill Company have been replacing their mules with new, supplanting the twist with wet; over 33,000 spindles have been replaced in this manner. On being congratulated about the work, the chairman is reported to have said that if the old mules had been his they would have had to tarry in a little longer, as they were turning off 29 hands a spindle. A Shaw salesman inquired as to what sort of stuff they made, and the chairman answered, "As good as they make your road."

The members of the Oldham Card and Blowing Room Operatives' Association have not yet settled down after the unpleasantness caused over the

resignation and reinstatement of their secretary (Mr. G. Silk) and the subsequent withdrawal of the president (Mr. E. Anderson). Meetings of the branches have been held this week, and at some the feeling ran high as to withdrawing from the association. Decisions were arrived at calling upon Mr. Silk to relinquish his position, and expressing confidence in Mr. Anderson, so that the association does not seem in a very healthy state. The relations of the members have been so disturbed that it will take time for them to assume their normal condition. Mr. Silk, however, still retains the secretaryship.

A circular has been issued by the Oldham Master Cotton Spinners', etc., Association and the Oldham United Committee of Factory Workers (representing various associations) as to the terms of agreement on the holidays, namely, Christmas Day, Easter Monday or Good Friday (optional), Whit-Friday and Saturday, and at the Wakes, Friday night to Monday morning but one following. The circular states that it is understood that when Christmas Day falls on a Sunday, the Monday following be observed as a holiday; also that where the out districts observe Wakes holidays other than Oldham Wakes, the holidays stated shall be consecutive and continuous, and not divided between one local wakes and another; and that both employers and employed shall use every effort to carry out this arrangement, and where it is found that members of either association fail to do so, their cases shall be dealt with by each Association, whether of employers or employed. It is also agreed that firms who do not carry out this arrangement, not being members of the Oldham Employers' Association, shall be dealt with by the Operatives' Association, through the members of that Association, and that stoppages arising from breakdowns, or other causes, shall not be taken into account in reckoning the holidays, and that the associations of employers and employed use their utmost influence to keep intact the above agreement relating to the annual holidays.

Preston.

On the 8th inst. the managers and overlookers of the Hartford Mills Co., Limited, Preston, were entertained to supper by Mr. Roger Bamber, who had the previous day severed his connection with that firm to enter upon his new duties as secretary and salesman to the Tennyson-road Cotton Spinning and Manufacturing Company, of the same town. The result was a pleasant and convivial evening, during which several presentations were made. Mr. Bamber was presented with a handsome marble time-piece, bearing a suitable inscription from the overlookers, a silver-mounted walking-stick from his late office colleagues, whilst Mr. Bernard Simpson, on behalf of the directors of the Hartford Mills Company, presented him with a 25 note as a token of the esteem in which he was held by them, and wished him every success in his new sphere of labour. Mr. Bamber had nearly completed his eighteenth year of service at the Hartford Mills, as junior clerk, and (for the last ten years) as cashier.

Radcliffe.

A youth named Robert Howarth was caught in the strapping connected with some machinery at Haddock's Shuttle Works, on Tuesday, being killed instantaneously.

Rochdale.

The half-yearly meeting of the members of the Rochdale Chamber of Commerce was held on Monday. Mr. John Turner presided. In the course of his address he said that the carriage of cotton from Liverpool to Rochdale was charged by the Lancashire and Yorkshire Railway Company 10d. per ton more than from Liverpool to Oldham. The Chamber thought this charge was very unfair, and appointed a deputation to wait on the Company. The Directors, however, wrote to say that pending the settlement of the question of railway rates, it was inadvisable that the matter should be gone into at the present time. Mr. Evans briefly addressed the meeting on priority of rent, and described how the question had been discussed by other chambers to which deputations had been sent by the Rochdale Chamber.

Rossendale.

Ring spinning is becoming popular in Rossendale, and many mills are putting in new ring frames, Messrs. Howard and Bullough's being well to the fore. New looms are also being extensively put into old sheds.

Shaw.

The firm of Messrs. A. and A. Crompton, Park and Woodend Mills, Shaw, are throwing out a large number of throstle spindles, and replacing them with Howard and Bullough's ring frame.

SCOTLAND.

Dundee.

The Dundee mill-workers, at a mass meeting held on Monday, passed a resolution demanding another increase in their wages.

The old-established rope and twine business of Messrs. Kennedy and Rae, which has been in the market by reason of the death of both the partners, has been sold to Messrs. W. Lawson and Sons, rope spinners, of Dundee, in whose hands the business is sure to be conducted with enterprise and care.

A social meeting of the employés at the Wallace and Constable Works (Messrs. Malcolm, Ogilvy, and Co.) was held on the 11th inst., for the purpose of presenting Mr. David R. Malcolm with several gifts on the occasion of his leaving Dundee, to fill the position of partner and manager of a mill in Pennsylvania. Mr. James Cunningham, junr., presided, and the hall was filled. In the course of his remarks the chairman said they had just been reading about the question of tariffs, and it was a good thing the Americans had not a tariff on Scottish brain and energy, for if such had been the case their friend would have had an exceedingly heavy duty to pay. (Applause.) The presents consisted of a box of drawing instruments and an illuminated address, and also a silver tea urn for Mrs. Malcolm.

Glasgow.

As an evidence of the dulness that prevails in the weaving trade in the East End, it may be mentioned that one of the large mills closed on Saturday, and will not re-open for the next fortnight.

The Chamber of Commerce have adopted a motion to the effect that the Chamber, deeply sensible of the immense advantage of a universal penny post, should memorialise the Government to appoint a Select Committee to consider the whole subject.

Johnstone.

Most of the works closed on Wednesday night for the fair holidays, the others closing on Thursday. The flax mills will commence again on Tuesday, and the engineering works on Monday week.

Kirkcaldy.

The tenters and dressers in connection with the Kirkcaldy linen and weaving factories have obtained a rise of wages of 1s. per week.

Monifieth.

On Tuesday afternoon the cogwheel of the engine at Monifieth Jute Works broke down, and, as a consequence, the works were entirely stopped, and the employes, several hundreds in number, are meantime thrown idle.

Tillicoultry.

Mr. David Paton, the last surviving original partner of the firm of J. and D. Paton, manufacturers, Tillicoultry, died at his residence, Clarendon, on Saturday night, after a protracted illness. The deceased, who was in the 87th year of his age, was a native of Alloa, and for the past 60 years took a prominent part in the affairs of Clackmannanshire as a Commissioner of Supply, Justice of the Peace, and honorary president of numerous charitable and religious societies. His name is known throughout the country as a philanthropist, especially as a liberal supporter of home and foreign missions, besides bearing the whole expense of stated missionaries for poor districts in Alloa, Sauchie, and Coalsnaughton, and entertaining, free of all charge, at Crief Hydromatic, of which he was a large shareholder, as many U.P. ministers as chose to visit that establishment, and accept of his hospitality. Mr. Paton has given his entire fortune—£200,000—for missions, and for the past two or three years had been living on a small annuity which had been purchased for him.

THE NEW AMERICAN TARIFF.—A town's meeting, presided over by the Mayor of Sheffield, was held in Paradise-square, Sheffield, on Tuesday, to consider the provisions of the proposed new American Tariff Bill, and its prohibitory effect on Sheffield manufactures. Mr. Richardson, the Master Cutler, moved a resolution protesting against the prohibitory tariffs proposed to be placed on British goods by the United States of America in return for a free market accorded in the United Kingdom to American products, and calling on the Government to inform the President of the United States that such action, being hostile and unfair to the welfare of the manufacturing population of Great Britain and Ireland, is viewed with great disfavour in this country. The resolution was seconded by the President of the Chamber of Commerce, and enthusiastically carried. A second resolution, to forward the previous motion to Lord Salisbury, was also carried unanimously.

Letters from our Readers.

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

NEW ZEALAND FLAX.

(TO THE EDITOR OF *The Textile Mercury*.)

SIR,—I see from correspondence in the newspapers that the New Zealand Flax (*Phormium tenax*) has a wide range of growth besides its native home. It thrives luxuriously at The Manse, Prestonkirk, N.B., growing to the great height of ten feet, including flower spikes. This year it has flowered more freely than in any former year, owing, no doubt, to its getting established, and the climate being suitable to its growth. It also grows freely at Park Grove, Renfrewshire, but at Ashbourne, in the same county, it barely manages to live, being in an exposed and windy corner of the garden. It will, therefore, be seen that shelter is considered to be in its favour if a good plant is to be expected. It has also been grown at Strathkinness and at St. Andrews, in Fife, from seed saved from plants grown as far North as Orkney. The plants at Strathkinness and St. Andrews have also reproduced themselves, proving that they also are growing in a soil and climate suitable to them. Plants raised from the above are to be seen growing in the University Botanic Gardens, St. Andrews. Some of your readers may have some experience of the New Zealand flax plant, whether it thrives or not in other quarters. Thomas Melville, a gentleman from New Zealand, at present staying in Glasgow at 15, West Nile-street, who is acquainted with the plant, will be glad to examine any samples grown in this country, and report as to their value compared with the native article. It might be advantageous to have any samples tested by such an authority.—I am, &c., D. S. G.

Legal.

THE RATING OF MACHINERY APPEAL CASE.

RODEN AND CO., APPELLANTS: THE OVERSEERS OF CHARD, RESPONDENTS—GIFFORD, FOX, AND CO. V. THE SAME.

The appeal of the above-named two firms of lace manufacturers against the rating of machinery in their premises at Chard was heard on Tuesday by the MASTER OF THE ROLLS and Lord Justice LINDLEY and Lord Justice BOWEN.

The case raised the question, not strictly of rating machinery, but as to enhancing the rateable value of premises by reason of the machinery. There were two cases in which the question was raised, both cases of lace factories at Chard, and in both of which it was admitted that the rateable value of the premises rated had been considered by the assessment committee as largely enhanced by the machinery. The sessions at Taunton had upheld the rating, and on appeal to the Divisional Court this decision was affirmed—that is, it had been held that the rateable value might be taken to be increased by the value of the machinery. In fact, the value had been enhanced to the extent of four times the rateable value of the premises. In one of the cases the total rateable value had been made £1,090, of which £200 was for the value of the premises, and £890 for the machinery. Both cases were heard together, and it was admitted that to some extent the question had been determined by the Court in the "Tyne boiler" case (18 Q. B. Division Reports), in so far as the Court then expressed an opinion that to some extent the value of the machinery might be taken into consideration; but the question now was raised on what principle the assessment should be made. It was agreed to take the case of Gifford and Co. first, in which it was admitted that the total rateable value was £1,095—that is, £297 for land, building, and fixed motive power, and £800 for the machinery. The machinery taken into account was the "bobbinet" machines, as they were called—frameworks fixed to the floor so as to steady them, but not so fixed as to be made part of the buildings; and it was admitted that the machines might be removed, though necessary for the use of the premises as a bobbinet lacefactory. It appeared that

the sessions had approved of the estimate by the Assessment Committee of the rateable value of the premises on the footing of the annual sum for which the premises might be let along with the machinery. This was disputed by the tenants, who appealed against the decision upholding the assessment.

Mr. HUGO YOUNG appeared on the part of the tenants, the appellants, and argued the case for them—contending that in effect the Assessment Committee had rated the machinery. He admitted that by the decision of the Court in the Tyne boiler case the value of machinery might to some extent be taken as enhancing the rateable value of the premises. The way in which machinery was rateable—[LORD ESHER.—You must not use that expression; you must not assume that machinery has been rated; it is a question as to enhancing the value of the premises by reason of machinery.] No doubt that was the way in which it was put by the Court in the case referred to, and the principle must be limited in its application, or goods would be rateable. The value of a farm might depend upon the machinery, &c., but would the machinery increase the rateable value? So the value of a clothier's shop would depend upon the sewing machines, but would they increase the rateable value of his shop? The premises here might be used for other purposes if the machines were removed. [LORD ESHER.—Not as a lace factory.] But the rateable value of premises cannot depend upon the particular use to which they are applied.

[LORD JUSTICE BOWEN.—How do you distinguish this case from the Tyne boiler case?] The machines here are more in the nature of chattels than in the former case. [LORD ESHER.—You would make a factory a building within four bare walls, apart from everything which gives it value. But Lord Campbell long ago laid it down that a factory must be rated according to its value as combined with machinery—without considering whether the machinery is attached to the building, &c. [LORD JUSTICE BOWEN.—Was it not laid down in the Tyne boiler case that the machinery need not be fixed to the building?] It was so, no doubt; but the application of the principle must be limited in some way or it will include furniture in a furnished house as raising the rateable value of the house. [LORD JUSTICE BOWEN.—Is not the test this—what would pass to a purchaser on a sale of the premises?] True, that was a test put; but surely these machines would not pass on a conveyance of the factory. [LORD ESHER.—The principle laid down in our former decision was that all things on the premises necessary to the use of the premises for the purpose for which they are used, and which are not intended to be removed so long as the premises are used for their present purpose, may be taken into account in estimating the rateable value of the premises.] These machines are not essential to the use of the premises. [LORD ESHER.—Yes, as a lace factory.] They are removable. [LORD ESHER.—Some of them are so heavy as not to be required to be fixed at all except by their own weight.] If that is sufficient it is difficult to put any limitation on the application of the principle. And if the whole rent is that which would be given for the premises with the machinery then in effect machinery may be rated.

The Attorney-General (and Mr. Douglas Metcalfe), on the other side, were not called upon.

The COURT upheld the judgment and dismissed the appeal.

LORD ESHER said he had sought in the Tyne boiler case to give a good working rule, and he could not improve upon it. Things like sewing machines, not necessary to the use of the premises, were not to be taken as enhancing the value of the premises, but machines, whether fixed to the floor or not—if necessary to the use of the premises as such, and going to make up the value for which the rent was paid—might be taken into account in estimating the rateable value. These cases clearly came within the principle laid down, and the appeal must be dismissed.

The LORDS JUSTICES concurred.

UNMARKED COTTON BALES.—The case of "Buckley v. Gossan," which was on Monday disposed of before Judge Collier in the Liverpool County Court, possesses much interest for the cotton trade, affecting, as it does, the method of dealing with the unmarked bales of cotton which are frequently discharged from vessels. The plaintiff is an Oldham cotton spinner, and the defendant a Liverpool master porter, and both were represented by counsel. The suit was to recover £50 in respect to a number of bales alleged to have been wrongly delivered. From the facts presented before the Court it seemed that 290 bales, part of the steamer City of Lincoln's cargo, had been consigned to Mr. Buckley, but the number bearing his mark turned out to be

26 short, and in place of those, 26 unmarked bales were delivered, though some of them were declared by plaintiff to be very inferior quality. A considerable number of unmarked bales had to be dealt with, and to overcome the difficulty some of the consignee's warehousemen were induced by the "counter-off" to take delivery of unmarked bales to the number required, they being paid 2s. per bale. The person who took delivery of cotton sold to the plaintiff received with the 26 unmarked bales the sum of £3. The contention on one side was that the master porter was responsible for this proceeding, and bound to make good the damage the plaintiff had sustained; while on the other side it was submitted that the defendant was not liable because the "counter-off," who had actually authorised the money to be paid to the plaintiff's representative, was not his servant. It was also urged that the plaintiff was unable to shew that he had sustained damage. After hearing arguments, his Honour decided in favour of a non-suit, on the ground that it was not within the ordinary scope of the duties of the person who acted in the matter on behalf of the defendant to act as he had done in such a way as to bind Mr. Gossan; and further, that the plaintiff had not shewn that he had sustained any damage by what had been done. It seems that the warehousemen of no fewer than 15 out of 18 consignees of cotton of the City of Lincoln took delivery of unmarked bales, and received 2s. a bale. Unmarked cotton places a master porter in a difficulty, if consignees will not accept it, for he has no right to sell it himself.

THE BRADFORD FRAUDS.—Before Baron Pollock and Mr. Justice Day, the case of Lister v. Varley came on for hearing in the Queen's Bench Division, on Thursday. Mr. Henry Manisty said this was an appeal from an order of Mr. Justice Lawrence, in Chambers, by which it was ordered that the plaintiffs and their solicitors might have inspection, for the purposes of this action, of the books of the Leeds and County Bank at Leeds, so far as the same related to the account of the defendant for the period commencing September, 1881, to February of the present year. He had to move that the order be rescinded or varied, by limiting the inspection to the production of such entries as the Court might think right. The claim was for about £25,000 in respect of transactions which went over a period of some years. Without calling on Mr. Lockwood, Q.C., and Mr. Charles Gould for the plaintiffs, the Court confirmed the order of Mr. Justice Lawrence and dismissed the appeal with costs.

Miscellaneous.

COCHINEAL.

The Belgian Consul at Tenerife has forwarded to his Government the following report on the cultivation of cochineal in the Canaries, from which we make the following abstract:—

The cochineal is a native of Mexico, where the nopal cactus grows in abundance on those elevated plateaux which are comparatively cool. Immense fields of this plant are cultivated; these are called "Nopaleries." From the time of the discovery of America the cochineal formed for the Spaniards of Mexico a source of immense wealth. They secured to themselves a monopoly in it by forbidding under pain of death the exportation of the insect or that of the plant itself. Nevertheless, some samples were procured at San Domingo, but the attempts to cultivate them proved ineffectual.

The Canary Islands, therefore, were the first market for cochineal; it was imported there from Mexico by Colonel Don Juan de Megliorini, Governor of the province. He undertook the first cultivation at his own expense. He reproduced the insect as well as he could and distributed the new females obtained by reproduction to those who asked for them. From these first experiments made in that island important results had already been obtained in 1828.

The cultivation of this insect was encouraged by the Spanish Government. In 1837 an official establishment for reproduction was formed for the cultivation of the nopal and for the purchase of the necessary females. It was made the duty of the director, besides, to distribute the reproductive insect in all parts of the islands and to give practical lessons on its farming. Don Santiago de la Cruz was charged with the educational part of the duties, and Colonel Megliorini was made director in 1838. The garden intended for the establishment had been presented to the Government by the widow of Don Antequera, who had been the main promoter of this industry. This establishment, which was to yield wealth to the Canaries, met with a great deal of

opposition at first, but, supported by the Government, it maintained and improved its position until at last it succeeded so brilliantly that every one wished to have a share in it; the inhabitants set themselves definitely to study the subject, and when the processes were well understood everything was sacrificed to this new industry, which, when once a "nopalerie" was well established, brought in a profit of from 30 to 40 per cent. net.

The first export took place in 1831, it only consisted of 8 lbs. sent to Seville; 120 lbs. were exported in 1832; while five years later 24,548 lbs. were exported to Spain, France, and England. From that time forward the quantity exported never ceased to increase, but it was especially after 1852 that the cultivation of cochineal took a great development in consequence of the use of imported guano, and the great period of production was from 1876 to 1879. Until 1860 the trade monopoly of the cochineal belonged to the Republic of Honduras; but a few years afterwards the production of cochineal in the Canaries was already far greater than that of all the rest of the world.

The cochineal lives and prospers in all countries where the cactus grows spontaneously. It was imported into Algeria in 1845, and 1853 the number of nopsals was 51,500. In the Canaries cochineal is produced in all islands, with the exception of Lanzarote and Fuerte Ventura. The species of cactus on which cochineal is cultivated in the Canaries is different from that of Mexico; in the Canaries it is the *Opuntia ficus indica*, or Indian fig, which is used.

Cochineal is an insect, the female of which is wingless. For several centuries the Europeans who received cochineal in the form in which it is still exported—that is to say, in the form of brown dried and almost spherical grains—supposed this merchandise to be a vegetable product, and this error had not entirely disappeared in the last century, although as early as 1530 Acosta had shewn the cochineal to be an insect.

In the larva state these insects are so small that they can only be seen clearly by the aid of a glass; in the perfect state the females, which are much larger than the males, attain to the size of a small bean, the body, which is almost shapeless, being sometimes oval and sometimes globular. Locomotion is impossible to these insects; they live motionless on the cactus leaves, out of which they suck the juice by means of a pointed beak with which they are provided. The cochineals lay their eggs at the age of two or three months, and die soon after, leaving nothing but a dried-up membrane which protects the eggs. From these latter proceed the larvae, which spread over the nopsals or cactuses, where they fix by preference on those points which are best sheltered from the wind. In this way there are several reproductions each year.

After having collected the cochineal from the cactus, what is not kept for reproduction is killed to be sold. The usual mode of killing the insects is to plunge them into boiling water for a few instants but this has the disadvantage of lessening the weight and destroying the silvery colour.

Several commercial species of cochineal are distinguished.—1. The nopal cochineal or *Coccus cacti*, the fine cochineal, is the most important. It is this which furnishes for dyeing purposes the beautiful red colour which is so well known. 2. The wild cochineal, also cultivated in Mexico, which only produces a ruby colour. 3. The cochineal of the fig trees of the East Indies which is collected twice a year, and produces carmine lake. 4. The cochineal of the sugar cane. 5. The cochineal of Poland, which grows upon the root of *Sceleranthus perennis*. It gives a good colour; this used to be the object of an important trade before the importation of the Mexican cochineal. It is still used in Poland and Russia for dyeing morocco cloth, silk, and hair.

The commercial species or varieties of fine or nopal cochineal are mainly four in number; those from the Canaries, from Honduras (which is not commercial), from Vera Cruz, and from Java.

The cochineals of Canary and Honduras are the most highly esteemed; they are also the most expensive.

1. The cochineal of the Canaries includes three sorts, the white, the black, and the grey. It is principally exported to England and Spain. The white, which is the heaviest and the most valued, is sent away in bags of 200 lbs., and the black and the grey, which are lighter, in bags of 140 to 160 lbs. The black cochineal is that which has been killed by rubbing it in the bags; a little vinegar is sometimes added to render the black more brilliant. The grey is what is called madras, and which has died a natural death after having reproduced, and after being dried in the sun; this is the lightest. The rose-coloured is the white of which a few have been crushed to colour the

others. The scarlet is that which is obtained by adding some drops of ammonia while they are alive.

2. The cochineal of Honduras presents three varieties—the black, the grey, and the reddish. The black or *sacatilla* is blackish or reddish brown with white marks; the powder of it is of a crimson red when it is dried and becomes darker still when it is wetted; this is the most highly esteemed.

3. The cochineal of Vera Cruz also includes three varieties—the *sacatilla*, the grey, and the reddish. It is exported in bundles containing from 80 to 100 kilos, wrapped up in a triple envelope of grey cloth, leather, and woven nets.

4. The cochineal from Java is in reddish grains, and is exported in small tin boxes containing from 40 to 60 kilos. It is of little value.

At the commencement of the cultivation of cochineal, the prices it fetched were very high; the pound of 460 grammes was sold for 10 and even for 15 francs. The export, which had been only 8 lb. in 1831, rose to 6,000 lb. in 1836. From 1841 onwards the quantities exported increased sensibly; 100,566 lb. were sent off in that year, and 368,109 lb. in 1851. In 1850 France imported 309,040 kilos of cochineal at 10 frs. the kilo, most of which came from the Canaries. In 1856 the exportation was 1,322,160 lb.; from 1860 to 1879 the annual export varied from 2 to 6 millions of pounds, and over, at a price of from 5 frs. to 2 frs. 50 c. per pound. From the year 1879 the cultivation of the cochineal diminished steadily every year in the Canaries, the price having fallen to 90 centimes or 1 franc in 1889; the profit is now extremely small. The great period of production was from 1860 to 1878. Cochineal then formed almost the total of the export trade of the Canaries.

This was the period of prosperity and wealth in the Canaries. All was sacrificed to cochineal; vines, palm-trees, all sorts of trees were swept away to make room for this industry, and all the rocky portion of the archipelago was, no matter at what expense, turned into fertile ground. Cochineal brought fortune to the many, comfort and ease to all. In those days gold was commoner than silver in the Canaries.

In 1859 the discovery of fuchsine was made, and from that year to 1866 experiment was shewing what dyes could be fabricated from it. This largely affected the prosperity of the Canary industry. Nevertheless several years passed before the influence of these discoveries seemed to become generally felt. When fuchsine was first discovered, the price of cochineal went down; but the export trade continued to be more and more important, while the manufacture of fuchsine was limited in extent. For instance, in 1869, the exportation of the Canaries was 21,134,762 frs., of which 19,749,824 frs. was cochineal, the quantity exported being 2,795,360 kilos, at a price of 7-07 frs. per kilo.

This state of prosperity lasted several years more, notwithstanding the progressive fall in prices, but a fortuitous circumstance brought about the destruction of this essential part of the revenues of the Canaries by provoking a rapid extension of the manufacture of aniline products. In 1879, at the moment when the principal cochineal harvest was being gathered in, torrents of rain suddenly fell with a violence wholly exceptional in the Canaries. The belief spread that the harvest was totally lost. This news, carried to England, the principal market of Europe, produced a sudden and important rise in the price of cochineal; from 2s. 6d. the pound the prices went up in London to 4s. and 5s. However, the amount of cochineal ultimately forwarded was no less than in preceding years. The rains had not been fatal, and, moreover, producers who had cochineal in reserve from preceding years hastened to secure the rise in the market. Confidence was lost in Europe, and on all sides orders were given to the numerous manufacturers of aniline dyes. From that moment cochineal has never recovered its position.

A period of great depression and poverty followed in the Canary Isles, but this is now beginning to pass away, as the inhabitants are turning their attention to the cultivation of grapes, wheat, tomatoes, etc.

BITTER complaints come from Vienna regarding the cloth trade of Austria. Since the duty on the article has been raised so much as to place English cloths altogether out of the reach of all except the wealthy, the public are obliged to make use of home-manufactured cloths. These are not only inferior in appearance to the English cloths generally in use, but they do not wear. Half-a-dozen cloth manufacturers in Reichenberg and Brünn have become millionaires in a few years, and that is all Austria has achieved by its protective duties.

TEXTILE INDUSTRIES OF DUMFRIES.

As an industrial centre, Dumfries holds an important position, the manufacture of tweeds being carried on here on a most extensive scale. Messrs. Walter Scott and Sons, the firm doing the largest business, have three factories—Nithsdale Mills and Troqueur Mills—one on each side of the Nith at the south end of the town, and Kingholm, about three-quarters of a mile further down the Nith. Kingholm was the original mill, and in this Mr. Robert Scott began the manufacture of tweeds about 1846, the mill having been first started for spinning yarns for the hosiery trade. In 1857 Mr. Robert Scott retired, and the other mills were successively erected by his sons—Nithsdale about 1857, and Troqueur in 1866. The three mills eventually became the property of Messrs. Walter Scott and Sons, and the senior partner of this firm having retired three years ago, the business is now conducted by the grandsons of the original founder. Each of the three mills in which this prosperous business is carried on is constructed on the same plan. There is a handsome frontage of three or four storeys built of brick and faced with the beautiful red sandstone of the district, and behind this are the rows of one-storeyed buildings or weaving sheds in which the looms are situated. All being placed in healthy open situations and in lofty well-ventilated apartments, the employé work under exceptionally good sanitary conditions. The Messrs. Scott conduct in their mills all the processes of dyeing, carding, spinning, weaving, and finishing from the raw wool to the finished cloth. They have about 420 power looms at work (a considerable proportion of which are fast looms), and employ between 1,400 and 1,500 workers, about one-fourth of whom are men, the others being women and young persons. Women earn from five shillings to a pound weekly, and the ordinary workmen from fifteen to twenty-five shillings, but there are many positions open to the men in which a much higher wage can be earned. The employés are almost exclusively natives of the town, and it says much for the relation of the employers and employed that, notwithstanding the widespread nature of the industry, there is little migration of workers from Dumfries to other centres. The materials produced are Cheviot and Saxony tweeds, and frieze and other overcoatings, the manufacture of the lighter summer goods commencing as early as September of the previous year, and terminating about April, when the fabrics for the ensuing winter are begun. Both home and foreign wools are used, the former for the rougher class of home-spun tweeds and the latter for Saxony tweeds and other fine goods. The firm have an extensive connection in all parts of Great Britain, the Continent, and America.

Just above the Troqueur Mills, on the west bank of the Nith, is the handsome range of buildings known as the Rosefield Mills, opened only last year by Messrs. Charteris and Spence. This extensive factory is the representative of a small business started in 1868 by Mr. J. M. Henderson at the Dockhead, and acquired by the present firm about nine years ago. In that time the number of workmen employed has risen from 30 to between 400 and 500. The mills have a handsome stone frontage; partly of one and partly of two storeys, and in this are the offices, warehouse, and finishing departments. Behind this, and on a terrace fifteen feet lower, are the engine-house and milling departments, and on a third terrace, at a similar distance below and next the river, are the weaving sheds. The factory covers a space of about 2½ acres. Of the 140 looms at work here most are of the new fast pattern. The firm produce about 400 pieces of tweed (Cheviots, Saxony, and other kinds) per week, and these, besides being sold largely in Great Britain, are extensively exported to the Continent and the colonies. The mill-workers generally have a rather comfortable and well-to-do appearance. They bulk largely in the working population of the town, and in the evenings after work hours the large white aprons which the girls wear both at work and leisure make them conspicuous in the streets. Like most of the workpeople in the south they generally wear clogs, a kind of foot-gear which, in the neatly-finished forms to be got here, is by no means the clumsy article occasionally seen elsewhere. They have the great advantage of being comfortable and cheap, and it is asserted that the wooden soles are lighter than those made of leather. Certainly schoolboys who wear them run and "jink" about the streets and open places just as smartly and lightly as boot-wearing boys do elsewhere. Perhaps one of the causes of the high favour in which they are held is the prevalence in Dumfries, as in many of the Southern towns, of cobblestone pavements, the sharp edges in which are rather try-

ing to thinly-clad feet. A passer-by in the streets in the evening can hardly miss noticing an occasional and most uncommendable roughness and even profanity of language which even in the soft Southland dialect, is in the mouth of a young girl especially, rather shocking to a stranger.

The tweed manufacture, although the most important, is not the only industry that has arisen from the now extinct hosiery making, which at one time was almost the only support of the workpeople of the town. In King-street, on the Maxwelltown side of the Nith, at the north end of the town, is the factory of Messrs. Jas. Dinwiddie and Co., where drawers, semmits, combinations, and women's vests are made. There are about 110 men and about the same number of women and girls employed in the factory, and in a smaller finishing department on the east side of the river. Besides this, employment is given to a large number of persons in the country, to whom looms are supplied, all the working being done on hand-looms. Piece-work is the rule, except in the finishing department, and the wages earned are for men from a pound to two pounds ten shillings, and for women and girls from eight to fifteen shillings weekly. The goods are all of a very fine description, and one peculiarity, notable especially in the semmits for women, is the way in which they are shaped so as to fit the figure everywhere without creasing. The ordinary hours are from six till six, with two meal hours, but there is a good deal of overtime worked. Here, as elsewhere in the South, are to be seen the latest forms of improved machinery fitted to give a larger output with less work. Nearly all the looms are of the two-division type, on which two garments are worked at once; and there are some looms that make three and others four parts of garments at each stroke of the shuttle. The yarns are all got from spinners, principally from Alloa. One of the peculiar makes of the firm is the "Sanquhar" hosiery. It may be explained that although hose are no longer made the term hosiery is retained and applied to the under garments now woven. In this "Sanquhar" work rows of open stitches alternate with the closer ones, making the articles light and porous, and especially fitted for summer wear. Those being made at our visit were of the "sanitary" kind—a mixture of natural grey and white wool.

In the works of Messrs. J. L. Gibson and Co., manufacturers of plain and fancy gloves, there is another survival of the old hosiery work. The firm employ about forty men at hand-looms in the factory, but there is a large amount of the work done outside, and the total number of employes is about a hundred and twenty, and even more in busy seasons. All the men work by the piece, and wages run from 25s. to 40s., and even up to 50s. weekly. The woollen gloves in checked and striped patterns sometimes in several colours, are well known, and the looms on which the fine hand-knitting is so exactly simulated are most ingenious pieces of mechanism. Each glove, as to its formation, goes through three processes. First, the top or wrist part is knitted on one loom, the hand is put on by a second, and a third adds the fingers. In knitting tops as many as six gloves may be worked at once, in hands five, and in fingers even as high as ten. One of the most ingeniously-made looms here knits at one time four gloves each of four distinct colours, and this and another loom of a similar description are the only ones of the kind in the country. The colours are controlled by treadles, no handwork being required in changing colours. Each workman as a rule sticks to one branch—tops, hands, or fingers—the last being the more difficult and highly paid work. A look into the yarn room gives some idea of the extent and complication of the yarns used. Here there are all qualities of yarns, from an ordinary rough quality for heavy winter gloves to daintily glossy "mohair and silk," and rabbit yarn, some of which costs as high as 20s. per pound. In these different qualities, also, many hues are kept, and one most important point in the business is the invention of new and tasteful patterns in which these may be combined. Besides the knitting mill, the firm have another mill just below the "Caul," on the Nith, in which water power is used in some of the finishing processes, such as raising the nap and "milling," so as to produce a closer texture. When the goods are finished they are boxed in dozens for the wholesale dealers, who supply them to the retailers. As many as 100 dozen of gloves are sometimes sent out in one week. Messrs. J. G. McGeorge and J. A. Robertson are also engaged in the glove manufacture.

In the steam dye-works of Messrs. Shortridge and Son, on the bank of the Nith at the north end of Maxwelltown, there is the representative of a business which has existed for several generations, and, like many others, has been modified and extended. Originally a dye-work, this department is still carried on principally as a jobbing business, for which the firm have agencies all over the country.

To this have been added at various times the spinning of weaving yarns for the Glasgow trade, the weaving of tweeds, blankets, and rugs, principally for customers, and cloth finishing, for which they have connections in all parts of Scotland and Ireland. The works cover an acre or two of ground, and employ about a hundred persons, of whom a half are men. Girls earn about ten shillings weekly, and men from eighteen to twenty-five shillings. —N.B. Daily Mail.

Textile Markets.

REPORTED BY OUR OWN CORRESPONDENTS.

COTTON.

MANCHESTER, FRIDAY.

There continues to be a fairly moderate demand in the various sections of the market. The great strength of Liverpool, however, seriously hampers all attempts to transact business, as it is quite impossible to get buyers to follow, within reasonable distance, the upward movement. Producers, on their side, feel it to be exceedingly risky to conclude contracts without taking this into their earnest and careful consideration. In some cases they have been enabled to close transactions because of their ability, owing to fortunate purchases, to compromise with the prices offered on the part of buyers. The business passing has, consequently, been irregularly distributed, those spinners and manufacturers who have held out for full rates only totalling a comparatively small amount. With those who could make the concession required the result has been considerably larger, and, comparatively speaking, they report a good turnover. A great deal of attention is concentrated upon Liverpool, where the chief "bull" states that it is his intention to drive prices for middling American to 7d. per lb.; it is now 6½d. Much, however, may happen before he accomplishes his purpose.

COTTON.—It is becoming clear from the returns of sales made, that at least a portion of the trade has exhausted the purchases they made in the closing months of last year and the opening ones of this. Though the demand fluctuates and runs down for a short time, spinners seem soon compelled to resume buying. The result is that prices in American have steadily moved upwards, having gained ½d. since last report. Scarcely any other change has taken place in the official quotations. The tendency is, however, decidedly towards a higher figure, and the prices being realized are distinctly over the quotations. Brazilian sorts are in fair request, prices inclining upward. Rough Peruvian is in fair demand at steady rates; smooth sorts are stronger, rates having advanced ½d. Egyptians have been dull and somewhat irregular; but towards the close of the week have improved. For East Indian there has been an increased inquiry, full rates being now everywhere demanded; Timmivellys have advanced from ½d. to ¾d. In the future market business has been active, and prices have shown considerable fluctuations; as a result they are for old crop 4 to 5 points dearer, and for new 5 to 6. In New York July has risen 26, August 19, September 17, and other positions 14 to 15 points, while at New Orleans August has advanced 6, July 3, and the more distant months 13 to 15 points. The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forwarded.	Sales.	Stock.	Actual Export
American	13,376	49,369	41,070	464,360	475
Brazilian	7,660	2,243	2,280	42,690	45
Egyptian	635	2,662	2,840	58,210	6
W. Indian	2,309	543	700	9,680	161
E. Indian	8,804	7,368	8,020	234,140	882
Total	32,784	62,155	54,910	801,680	1,599

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

	G.O.	L.M.	Md.	G.M.	F.M.
American	6 1/8	6 1/8	6 1/8	6 1/8	6 1/8
Pernam	6 1/8	6 1/8	6 1/8	6 1/8	6 1/8
Ceara	6 1/8	6 1/8	6 1/8	6 1/8	6 1/8
Paraiba	6 1/8	6 1/8	6 1/8	6 1/8	6 1/8
Maranham	6 1/8	6 1/8	6 1/8	6 1/8	6 1/8
Egyptian	7	7	7	7	7
Ditto, white	7	7	7	7	7
M.G. Broach	5 1/8	5 1/8	5 1/8	5 1/8	5 1/8
Dhollerah	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
Oomra	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
Bengal	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
Timmivelly	4 1/8	4 1/8	4 1/8	4 1/8	4 1/8

YARNS.—In yarns, during the past week, there has been a variable distribution of business. The

total, however, may be considered as not far below an ordinary average. Sellers have, in very many instances, endeavoured to obtain higher rates, but their success in these attempts has not been great, as only exceptional instances seem to be discoverable where they have obtained an improvement upon the prices indicated in our last report. In a few cases a fair amount of forward business has been put through on slightly easier terms than can be done for early delivery.

CLOTH.—Cloth all round is being quoted dearer, and in some cases better prices have been obtained. Most manufacturers being fairly well sold in the leading staples, insist upon their quotations in full or decline business. The near advent of the district holidays is also influencing producers, as they are not under the same necessity of making provision for clearing their productions. Burnley, Nelson, and Colne have just closed their holidays, and the new arrangement for Blackburn district comes into force at the close of this week. This important centre will stop for nearly a week. Here and there some considerable transactions have been put through, but on the whole there is a disposition on the part of producers to wait and try to do better than can, generally speaking, be done to-day.

WOOLLENS AND WORSTEDS.

BRADFORD.

There has been a more active turnover in wool, spinners having low stocks and being anxious therefore to provide themselves with the raw material. Eotanies are slightly firmer, and all descriptions may be described as steady. Mohair and alpaca are slightly dearer, 14½d. and 15½d. having been paid for the latter. Yarns are only saleable at low rates. Single demi-lustres are in demand for the home market.

LEEDS.

There is more buying on Continental and American account, and a larger attendance has been noticeable in this market. Prices have, however, not been raised by this additional competition for goods, as wool has weakened, and for that reason producers are unable to induce buyers to give better terms. Worsted coatings, judging from this week's business, promise to revive. Stripes and plaids are favourite styles in tweeds.

ROCHDALE.

There has been more activity of late in the flannel trade, buyers having been eager to place orders. Wool has, however, advanced so considerably, that the prices offered are quite inadequate to meet the requirements of the manufacturers' situation, and an advance on previous rates is required.

GLASGOW.

Messrs. Ramsey and Co. in their report dated 15th July, say:—

Wool.—The Scotch wool market is fairly active, especially for white-faced wools of the new clip, which are freely offered. Prices have notably advanced since the opening of the season, and fine chevilles meet with good demand at full rates.

SHEEP SKINS.—The supply has been about an average, and of good qualities. Competition was fairly active and prices about the same.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

WEDNESDAY, JULY 16TH, 1893.

The Dundee jute trade is still quiet. America wires rather easier prices, and that market is so important that it rules prices. South American financial troubles interfere with business too, and the extraordinary condition of exchange prevents remittances.

Jute is rather steadier. The advance in the exchange makes shippers cautious, while from day to day there is now enough doing in new crop to prevent prices going lower.

Flax is still quiet with little business passing. In towns very low offers indeed are accepted. The new Archangel to hand is reported to be good—a fact of great importance to the trade here.

Jute yarns are unchanged in value, with rather more doing. For 8lb. cop 1s. 4½d. is paid, and for the better kinds rather more in proportion.

Hessians are quiet at 2½d. and for inferior goods a shade less is taken for 10½d. on 40 inch.

Linen yarn is still very dull, and for all except the very best warps the turn is again in favour of buyers. Tow yarns of inferior quality can hardly be sold.

Linen goods are in fair demand; all the looms are engaged, but there is a disposition on the part of some manufacturers to yield a shade in price.

Fife continues exceptionally busy. The new railways in connection with the Forth Bridge not only open up a country of surpassing beauty, but

place Fifehire, with its mineral wealth and busy manufactures of fancy linen goods, in direct connection with the great centre of commerce.

Cheap wet-spun yarns as well as the increasing demand for table linen and household goods all tend to give to Dunfermline, Frenchie and Kirkcaldy, a great impulse.

Arbroath is busy in canvas, and Dundee fancy jute goods are in fair demand. Makers of fancy goods are well employed.

MANCHESTER.

The tone of the trade here is very unsatisfactory, complaints being numerous and sales just the reverse. Jute goods are moving off very slowly and linens have been a drag in the market for a long time. It surprises sellers to see the lethargy of buyers, seeing that prices of pale roughs are so low. None, however, seem tempted to operate, and transactions are few. Yarns are difficult to sell, notwithstanding the fact that the stocks in the hands of local smallware manufacturers are admitted to be low. Kidderminster absorbs an average quantity of linen and jute yarns. Messrs. Wm. Barbour and Sons, represented here by Mr. J. Heron, who are well known amongst the carpet manufacturers as sellers of reliable linen yarns, report favourably regarding this branch of the trade.

SILK.

LONDON Produce Clearing House quotations of best 4/ Tsatlee: July 12s. 8d., August 12s. 9d., September 12s. 10d.; 5/ Tsatlee: July 11s. 5d., August 11s. 6d., September 11s. 7d., October 11s. 8d., November 11s. 9d., December 11s. 10d., January 11s. 11d., January 12s., March 12s. 1d. per lb. Sales registered, 40 bales.

HOSIERY AND LACE.

NOTTINGHAM.

Torohon laces for the making up trades have been in fair demand, as have also Maltese descriptions. Business on the whole has, however, not changed for the better, and manufacturers do not anticipate that a much more cheerful state of things will prevail until after the lapse of three months' time. The Levers branch, which is the principal section of the local lace industry, is noticeably depressed. Valenciennes, amongst the cotton laces, is inquired for the most. In silk laces Chantilles form the principal feature, scarves made of this material being also in demand. Costume hats still move off freely. Curtains also continue to sell largely, although complaints are made regarding low prices.

The hosiery trade is not so active as could be desired.

LEICESTER.

English wools are in fair demand, but purchases are chiefly for immediate wants, no speculation being noticeable. The yarn trade is slightly brisker, but the rates paid have not improved in the same ratio. Lambs' wool and natural under-clothing are the principal sellers in the hosiery department. Elastic webs for abroad are in active request.

DRY GOODS.

MANCHESTER.

There is a very quiet tone throughout the trade, and there will not be much doing now until the autumn goods come in. Light summer fanetes are unsalable. The season has been very unfavourable for goods of this description, and stocks are heavy, so that considerable loss will be felt by warehousemen. Even fine weather, which has hitherto been wanting, would not change things for the better, seeing that buyers now prefer waiting a few weeks for the autumn stuff. The flannel trade, of which cheerful reports have been received from some distributors, is not spoken of so hopefully by manufacturers and agents, who complain that the year has been an exceedingly bad one. The linen end is slow also, notwithstanding the abnormally low prices at which goods can be obtained. French merinos are slightly weaker, manufacturers on the other side having apparently had large stocks, which they have endeavoured to reduce by making concessions to buyers.

Fashion papers have been speaking favourably of the prospects of broad ribbons, but very little weight attaches to these utterances as the writers appear to derive their information from passing glances at the idle and fickle-fancied throngs of Rotten Row and neighbourhood. Heads of departments find that they have to use their own judgment in order to avoid bad stock and not to rely on fashion papers.

Tariff News.

TARIFF CHANGES AND CUSTOMS REGULATIONS.

RUSSIA.

MODIFICATION OF IMPORT DUTIES ON COTTON YARNS AND SEWING THREADS.

Note.—Poud = 36 lbs. avoirdupois. Gold rouble = 3s. 2d.

The *Journal de St. Petersburg* says that an increase of import duties has been established by the Russian Government on cotton yarns of superior quality and sewing threads in the following proportions:—

- Cotton yarn:**
- Numbers below No. 40 (English enumeration):
 - Natural colour, 3 r. 60 c. metallic per poud.
 - Dyed and dyed (with the exception of yarn dyed Turkey red), 4 r. 70 c. metallic per poud.
 - Dyed Turkey red, 5 r. metallic per poud.
 - From No. 40 to No. 50 (English enumeration):
 - Natural colour, 5 r. metallic per poud.
 - Bleached and dyed, 6 r. metallic per poud.
 - Numbers ranging from 50 upwards (English enumeration):
 - Natural colour, 7 r. 50 c. metallic per poud.
 - Bleached and dyed, 8 r. 50 c. metallic per poud.

Sewing cotton on wooden bobbins, 8 r. metallic per poud gross.

Twist yarn, with the exception of yarn on bobbins, 10 r. metallic per poud gross.

CLASSIFICATION OF ARTICLES IN CUSTOMS TARIFF.

A report, dated the 16th June, has been received from Mr. J. Michell, Her Majesty's Consul at St. Petersburg, stating that the following classification of goods has just been notified by the Russian Department of Customs:—

Thread made of silk and cotton to be cleared under section 213 of tariff, in accordance with observation to section 188, which is to the effect that rope, twine, etc., with admixture of silk, wool, silk waste, or cotton, pay duty as galleons, braid, etc., according to material of which made. Duty, 45 copecks gold per pound Russian.

UNITED STATES.

The following decisions affecting the classification of articles in the Customs tariff and the application of the Customs law of the United States were recently given by the United States Customs authorities:—

COTTON cloth for making hospital bandages is not free as a philosophical and scientific preparation.

TICKETS to be attached to cotton embroideries are dutiable as printed matter.

JIFENS rugs (so-called), not generally used as rugs, but intended for and used as curtains and draperies for doors and windows, and composed of wool, are dutiable under the provision in T. I., 362, for "all manufactures of wool of every description, made wholly or in part of wool," at the rate of 35 cents per pound and 35 per cent. *ad valorem*.

MOHAIR tops, made from the hair of the Angora goat, the same being scoured Angora hair, costing under 30 cents per pound in the unwashed condition, and being in the form of tops in their ordinary condition, are dutiable at the rate of 60 cents per pound.

On the exportation of bagging manufactured wholly from imported jute, and exported as covering of cotton in bales, a drawback will be allowed equal to the duty paid on the imported jute used in the manufacture of the bagging, less the legal retention of 10 per cent. The quantity of jute so used will be ascertained in each case in such manner as may be satisfactory to the collector, provided that the average allowance under each entry shall not exceed 1 1/2 lb. of jute per bale. This rate will apply to all entries remaining unliquidated.

On the exportation of card clothing manufactured by the Sargent Card Clothing Company of Worcester, Mass., wholly from imported cloth and wire a drawback will be allowed equal in amount to the duty paid on the materials used in the manufacture, less the legal retention of 10 per cent. The quantity of the materials so used will be determined for the wire by allowing 1 lb. for each square foot of the wire face of the exported card clothing, and for the cloth, by adding to the square measurement of the clothing the following per centages:—

	Per Cent.
For tops and sheets	6
For 2 in. fillets	9
For 1 and 1 1/2 in. fillets	12

Joint Stock and Financial News.

NEW COMPANIES.

JONATHAN HATTERSLEY AND SON, LIMITED.
Registered by R. Smith and Sons, 26, Lincoln's Inn Fields, W.C., with a capital of £23,500 in 25 shares. Object, to acquire the business carried on at Armley-road, Leeds, under the style of Jonathan Hattersley and Son, spindle and flyer makers. There shall not be less than five nor more than seven directors. The first are J. Hardwick, H. H. Andrew, W. W. Macray, and W. H. Webb. Qualification, 30 shares. Remuneration, £300, divisible.

BLACKMAN VENTILATING COMPANY, LIMITED.
Registered by Gadsden and Treherne, 23, Bedford-row, W.C., with a capital of £75,000 in 21 shares. Object, to purchase from the Blackman Air Propeller Ventilating Company, Limited, and the liquidators thereof, all the business, letters patent of every description; to acquire the business, letters patent, and inventions of Isaac D. Smead, of Toledo, Ohio, U.S.A. The first subscribers are:—

- | | |
|--|---|
| Col. J. T. Griffin, Onesta, Hampstead | 1 |
| Major-General Greene, 92, Belgrave-road .. | 1 |
| H. Wright, Chetwynd House, Hampton Court | 1 |
| M. Shillito, 6, Brownhill gardens, N.W. | 1 |
| G. C. Sutton, 52, Maddox-street, W. | 1 |
| A. Tibbits, Fernleigh, South Hampstead .. | 1 |
| H. Pring, Elm Villa, Richmond | 1 |
- There shall not be less than three nor more than seven directors. The first are Colonel J. T. Griffin, Major-General Sir W. H. R. Greene, H. Wright, and M. Shillito. Qualification, £250. Remuneration, £250 and 5 per cent. of net profits after 10 per cent. dividend.

S. BOTTOMLEY BROTHERS, LIMITED.
Registered by Wilson, Bristows and Carpmael, 1, Copthall-buildings, E.C., with a capital of £160,000 in 110 shares. Object, to acquire the business of mohair and alpaca spinners and manufacturers carried on at Battershaw Mills, Bradford, under the style of S. Bottomley Brothers. The first subscribers are:—

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| T. Bottomley, Battershaw, near Bradford .. | 1 |
| J. Bottomley, do. do. | 1 |
| E. Hallas, do. do. | 1 |
| J. M. Bottomley, do. do. | 1 |
| S. Feather, Bradford | 1 |
| W. Booth, Battershaw, near Bradford, | 1 |
| E. Kellett, do. do. | 1 |
- There shall not be less than four nor more than seven directors. The first are T. Bottomley, J. Bottomley, J. M. Bottomley, S. Feather, W. Booth, and E. Kellett. Qualification, £250. Remuneration to be determined in general meeting.

KERR AND HOEGGER, LIMITED.
Registered by G. Double, 14, Sorjents'-inn, Temple, E.C., with a capital of £50,000 in 110 shares. Object, to acquire the business of Messrs. Kerr and Hoegger, of the Grimshaw-lane Dye Works, Newton Heath and Harpurhey, Manchester, dyers and merchants. The first subscribers are:—

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|---|---|
| A. Hoegger, Harpurhey, Manchester | 1 |
| E. J. Scott, Preston New-road, Blackburn .. | 1 |
| A. Studer, 10, Marsden-street, Manchester .. | 1 |
| F. Cawley, Blackley | 1 |
| A. Liebmann, 10, Marsden-street, Manchester | 1 |
| T. Ashton, Moss Side, Manchester, | 1 |
| J. Crompton, 53, Robert-street, Chorlton-on-Medlock | 1 |
| A. Kerr, Harpurhey, Manchester | 1 |
- There shall not be less than three nor more than seven directors. The first are A. Kerr, A. Hoegger, A. Liebmann, F. Cawley, and D. Johnson. Qualification, £1,000 shares. Remuneration to be determined in general meeting.

JAMES SNOOK AND CO., LIMITED.
Registered by Waterlow Brothers and Layton, Limited, Birchin-lane, E.C., with a capital of £80,000, in 210 shares. Object, to acquire the business of James Snook, Houndsgate, Nottingham,

wholesale warehouseman and manufacturer of clothing, etc. The first subscribers are:— Shares.
 J. Snook, Houndsgate, Nottingham 1
 J. B. Snook, Houndsgate, Nottingham 1
 F. W. Snook, Houndsgate, Nottingham 1
 H. D. Snook, Houndsgate, Nottingham 1
 G. W. Jacklin, Mustier's-road, West Bridgford, Nottingham 1
 F. W. Chapman, 59, Forest-road East, Nottingham 1
 T. W. Marshall, St. James's-terrace, Nottingham 1
 The first directors are J. Snook, J. B. Snook, F. W. Snook, H. D. Snook, F. W. Chapman, G. W. Jacklin, and T. W. Marshall. Qualification, £250. Remuneration to be determined in general meeting.

CARPET MANUFACTURING COMPANY, LIMITED.
 Registered by Waterlow Brothers and Layton, Limited, with a capital of £270,000 in £10 shares. Object, to acquire the businesses of carpet and rug manufacturers carried on at Kidderminster by Morton and Sons, and Richard Smith and Sons, in accordance with an agreement which is specified in Clause 3 of the company's articles of association. The first subscribers are:— Shares.
 T. T. Radford, Kidderminster 1
 E. J. Morton, Kidderminster 1
 W. H. Smith, Kidderminster 1
 E. Smith, Kidderminster 1
 J. Smith, Kidderminster 1
 A. Cowell, Kidderminster 1
 J. Vurey, Kidderminster 1
 W. H. Roden, Kidderminster 1

There shall not be less than three nor more than nine directors. The first are T. Tempest Radford, E. J. Morton, W. H. Smith, E. Smith, J. Smith, and A. Cowell. Qualification, £500. Remuneration, £2,500, divisible.

THE APETHORPE MILLS COMPANY, LIMITED.
 Registered by Rooke and Sons, 45, Lincoln's Inn Fields, W.C., with a capital of £50,000 in £5 shares. Object, to acquire the Apethorpe Mills, situate near Gee Cross, Cheshire, and to improve and extend the same, in accordance with an agreement, made July 3rd, between Frederick Wild, J. Pilling, and Wm. Hyde of the one part, and J. Lindley, as trustee on behalf of the company, of the other part. The first subscribers are:— Shares.
 F. Wild, Hamnet-street, Hyde, Cheshire 1
 G. W. Sidebotham, Church-street, Hyde, Cheshire 1
 W. Wood, Haughton, Denton 1
 G. Bury, Haughton Green, Denton 1
 C. E. Brooke, Market-street, Hyde, Cheshire 1
 H. Beech, 17, Bismarck-street, Oldham 1

There shall not be less than five nor more than seven directors. The first are G. W. Sidebotham, F. Wild, C. E. Brooke, J. T. Fallows, J. Pilling, W. Hyde, C. E. Brooke, J. Whittaker, H. Beech, C. Halliwell, J. Shenton, and J. Lindley. Qualification, £500. Remuneration to be determined in general meeting.

LEICESTER MANUFACTURING COMPANY, LIMITED.
 Registered by John Potier, Warnford-court, E.C., with a capital of £150,000 in £5 shares. Object, to carry into effect an agreement, made June 21st, between Thos. Russell and John Potier, for the purchase of the freehold factory for the manufacture of hosiery known as Burton-street Mills, Nichol-street, Leicester. The first subscribers are:— Shares.
 T. B. Loader, Woodford House, Woodford, Essex 1
 W. Pearce, 32, Roderick-road, Haverstock-hill, N.W. 1
 W. H. Bowman, 91, Borough-road, Surrey 1
 A. Smith, 4, Torrington-park-villas, Finchley 1
 F. M. Bell, 15, Southgate-road, Wood-green 1
 T. Ward, 9, Mansfield-road, Dalston 1
 W. G. Morris, 35, Hargrave-park-road, Upper Holloway 1
 There shall not be less than three or more than seven directors; the first shall be appointed by the subscribers to the memorandum of association. Qualification, £1,000. Remuneration: Managing director, £300; other directors, £200.

GEORGE MAYALL AND CO., LIMITED.
 Registered by Thomas Chorlton, 32, Brazenose-street, Manchester, with a capital of £100,000 in £5 shares. Object, to acquire the business of George Mayall and Co., Mossley, Lancashire, cotton spinners, etc. The first subscribers are:— Shares.
 A. Stewart, 21, Exchange-buildings, Liverpool 1
 Mrs. Mayall, Birkdale, Lancashire 1
 R. Mayall, Birkdale, Lancashire 1
 Miss F. Mayall, Birkdale, Lancashire 1
 J. Hirst, Oaklands, Godley, Cheshire 1
 G. Andrews, Apley House, Mossley, Lancashire 1
 A. Lawton, Grafton-terrace, Mossley 1
 P. Shaw, Abney-terrace, Mossley 1

There shall not be less than three nor more than seven directors. The first are G. Andrews, J. Hirst, R. Mayall, J. Lawton, and P. Shaw. Qualification, 100 shares. Remuneration to be determined in general meeting.

Gazette News.

ADJUDICATIONS.
 Samuel Ward, Damstead Works, Dronfield, Derbyshire, spindle manufacturer.
 William Key and Henry G. Key (trading as W. Key and Co.), Boulevard Works, Outgang-lane, Nottingham, lace manufacturers.
 Alfred Whiteley, Globe Mills, Bradford, worsted spinner.
 John Corrigan, Bridgewater Works, Rodney-street, Manchester, machinist.
 James M. Davies, Neath Abbey, near Neath, woollen manufacturer.

RECEIVING ORDERS.
 Samuel Ward Dronfield, spindle manufacturer, Chesterfield.
 William Key and Henry Key, Outgang-lane, Nottingham, lace manufacturers, Nottingham.

PARTNERSHIPS DISSOLVED.
 Walton and Halstead, Bridge Mill, Hebden Bridge, shuttle makers.
 George Walker and Co., Portland-street, Manchester, merchants.
 Fletcher and Langley, Long Eaton, lace manufacturers.
 Kershaw and Swindells, Paradise Mill, Macclesfield, silk manufacturers.
 Ramm and Wright, Mosley-street, Manchester, muslin and fancy goods merchants.
 George Hodgson and Co., Ladywell Mills, Bowling, Bradford, machine wool-combers; as regards G. Hodgson and John Baker.

WINDING-UP NOTICES.
 W. B. Purdey and Co., Limited, Kidderminster. The Soho Mills Co., Limited, Tunstall.

NOTICES OF DIVIDENDS.
 Frederick Wallace (trading as F. Wallace and Co.), 2, Ashburnham-grove, Manningham-road, and Nelson-street, both in Bradford, stuff and woollen merchant; 1st d., first and final.
 Elizabeth Lockwood (trading as David Lockwood), Valley Dye Works, Kirkburton, Huddersfield, dyer, widow; 6s. 8^{d.}, first.

Patents.

APPLICATIONS FOR PATENTS.

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

Where Complete Specification accompanies Application an asterisk is suffixed.

- 7TH JULY TO 12TH JULY.
- 10,468. M. FAIRWEATHER, 1, St. James's-square, Manchester. Letting off the warp in Looms. *J. G. Avery, U.S.*
 - 10,470. J. DAWSON and R. HINCH, Kirkheaton Colour Works, near Huddersfield. New basic blue colouring matters.
 - 10,474. W. BLACKBURN and R. E. BRAY, Commercial-street, Halifax. Scouring and dyeing banks of yarn.
 - 10,509. J. Y. JOHNSON, 47, Lincoln's-inn-fields, London. Artificial indigo, and a new material suitable for use therein. (*Badische Anilin and Soda Fabrik, Germany.*)
 - 10,517. E. DEZWARTE and THE GENERAL FINANCIAL AND INDUSTRIAL CORPORATION, Ltd., 6, Bream's-buildings, London. Treatment of ramie, hemp, flax, and other fibrous plants.
 - 10,578. A. HEALD, 321, High Holborn, London. Woven fabrics.*
 - 10,579. A. HEALD, 321, High Holborn, London. Pile fabrics, and process and mechanism for making same.*
 - 10,599. H. H. LAKE, 45, Southampton-buildings, London. Colouring matters. (*K. Oehler, Germany.*)
 - 10,601. W. B. BAGGLEY, 45, Southampton-buildings, London. Twist lace fabrics.
 - 10,617. J. RHODES, 32, Crossley-street, Great Horton, Bradford. Warp polishing during sizing and beaming.
 - 10,623. J. J. MANN and J. H. SMITH, 4, St. Ann's-square, Manchester. Rollers used in machines for cutting velvets and other pile fabrics.
 - 10,628. JAMES NUTTALL, Manchester. Jacquard card lacing machines.
 - 10,674. J. D. WESTGATE and S. MAWHENNY, 151, Strand, London. Stop motion for looms.

- 10,689. G. H. PONTEFRACT, of the firm of ADDY, HORSFALL, and Co., and J. DYSON, Commercial-street, Halifax. Dabbing brushes of combing machines.
- 10,732. J. KAYSER, 6, Lord-street, Liverpool. Basting cotton cloth or other fabrics.
- 10,734. G. L. OEBLER, of the firm of Leipziger Strickwaschiren Fabrik, 323, High Holborn, London. Knitting machines.
- 10,744 J. MATHIEU, 6, Broom's Buildings, London. Embroidery machines.
- 10,759. R. HARTLEY and J. BRACKEN, 4, St. Ann's Square, Manchester. Setting the cards of travelling flats used in carding engines.
- 10,760. A. ROTHWELL, 70, Market-street, Manchester. Cords and similar pile fabrics.
- 10,762. WILLIAM A. BOOTH, Manchester. Sectional warping machines.*
- 10,767. A. SOWDEN, Central Chambers, Halifax. Loom dobbies and mechanism for operating drop boxes.
- 10,777. J. PORRITT, A. PORRITT, M. PORRITT, and W. H. FENTON, 8, Quality Court, London. Spinning and twisting fibres.
- 10,782. W. J. FORD, 4, Shenton-street, Leicester. Circular knitting machines.
- 10,785. S. Z. LLOYD, and G. W. NAYLOR, 55, Chancery-lane, London. Looms for tufted or pile fabrics.
- 10,802. O. IMRAY, 28, Southampton Buildings, London. Novel colouring matters for wool dyeing and printing. (*Färbwerke vorm. Meister, Lucius and Bruning, Germany.*)
- 10,811. J. HEARTH, W. HEARTH, and W. H. WILLIS, 323, High Holborn, London. Manufacture of stockings, etc.
- 10,887. I. OLDFIELD and E. CLARKESON, Perseverance Works, Bradford. Shuttles for weaving.

SPECIFICATIONS PUBLISHED.

- 1889.
- 10,213 HOFFMANN. Looms. 6d.
 - 12,987 GLOVER and HOWARD. Doubling machines. 6d.
 - 13,082 SCHOTT. Cut pile fabrics. 8d.
 - 13,346 CLEGG. Looms. 8d.
 - 13,558 JOHNSON (*Badische Anilin and Soda Fabrik*). Colouring matter. 6d.
 - 13,710 IMRAY (*Färbwerke vorm. Meister, Lucius and Bruning*). Azo colouring matters. 4s.

ABSTRACTS OF SPECIFICATIONS.

- 2,872. Feb. 19, 1889. **Knitting.** J. BOOTH, Lee Mills, Halifax. *Wool-comber machines.*—Cut pile fabrics, such as plush, seals, and the like, are formed by a series of hooks, situated opposite to the sinkers and arranged to act in conjunction with thread-guides and cutting discs. The pile loops are laid across a pair of hooks, and are tied into the knitted ground fabric before they are severed by the taking-up action, which draws them down the needles. [14d. *Drawings.*]
- 2,873. Feb. 19, 1889. **Driving-belt.** W. OLIVER, Gee Cross, Cheshire. Stretched American cotton duck or other cloth is coated with a composition consisting of oxidised oil and whitening, or other mineral whites, with a small proportion of india-rubber dough or paste. The fabric is next rolled, and then dried by being passed over heated cylinders or otherwise, after which it is folded into the requisite number of piles and stitched. The edges are treated with a solution of shellac, etc. [6d. *Drawings in Specification.*]
- 2,878. Feb. 19, 1889. **Looms.** J. BRIDLE, 14, Field-street, Fallowfield, Manchester. R. L. READE, Newhall, Wyshenshawe-road, J. TAYLOR, 181, Northenden-road, both in Sale, Cheshire, and J. M. MOUTSON, 6, Sydney-street, Fallowfield. In looms for weaving cords, velveteens, fustians, and the like the back of the fabric is carried or perched or raised by means of a card roller mounted beneath the breast beam and driven through spur and ratchet or other gearing from a part of the loom. In place of a twisting reciprocating carding bar may be employed. [4d. *Drawings.*]
- 2,917. Feb. 19, 1889. **Twisting machine for making organzine or silk warp.** J. H. TYMAN, 304, Ellison-street, Paterson, New Jersey, U.S.A. Improvements on the invention described in Specification No. 8,355, A.D. 1887. The threads on leaving the delivery bobbin pass over guide fingers, thence over a fixed guide rod, round the back of a detector lever, and over a fixed guide where they are brought together, the doubled thread passing over a traversing guide and round the feed roller, passing thence through the eye of a detector lever by the side of the driving roller, and through a guide to the winding spindle. The thread guides are carried by a bar, which is traversed longitudinally by means of a crank and connecting rod from a shaft driven by worm gearing. Stop-motions and holding-down arrangements are described. [11d. *Drawings.*]
- 2,941. Feb. 19, 1889. **Dyeing.** Dyon, T. B. SHILLER, 89, Chancery-lane, London.—(*J. H. Grey and Co., East, Paterson, U.S.A.*) Relates to the preparation of a violet colouring matter by the action of hydrochlorate of nitrosodimethyl-aniline upon galanin. Consists in heating these substances together in an acetic acid solution. The colouring matter is rendered suitable for printing purposes by transforming it into its compound with bluishite of soda. [4d.]
- 2,984. Feb. 23, 1889. **Dyeing.** T. INOWAL, 15, Johnson-street, Chesham, Manchester. *Mixed goods.*—Relates to a process of dyeing wools or knitted goods of mixed vegetable and animal fibres, such as cotton and wool. Consists in passing the thoroughly washed

fabric in an open state through the dyeing solution contained in a vat provided with suitable agitators. The fabric is then dyed by any suitable means and the colour is fixed thereon by passing it through a suitable oxidising solution, such as bichromate of potash, soda, or ammonia, chromic acid, nitrate of iron, sulphate of iron, sulphate of copper, carbonate or sulphate of soda. Finally, the fabric is passed through squeezing rollers, washed and dried. Any suitable dyeing solutions may be used, and examples are given in which extracts of logwood, guerciron bark, fustic, Persian berries, benzo-saffron blue, cutch or catechu, and peach wood are employed for producing blacks, browns, and tannin or gold shades. [64.]

3,233. Feb. 20, 1889. **Carding-engines.** G. and E. ABRWATER, Moss Brook Works, Collyhurst, Manchester.

Flats.—The card clothing is attached to the flat by means of clips or fasteners which generally are permanently attached to the bar. The clip is formed of a separate strip, preferably equal in length to the bar, and it may be wide enough to form a clip on each side of the bar. Instead of being secured to the face of the flat the strip may take over the back thereof, or it may extend only partially over the face of the flat, each clip being in this case formed of a separate strip. Several methods are described for securing the strip of metal to the bar. These consist generally in bending portions of the strip over the edge of the bar, some of the bent portions taking into notches in the bar, or in cutting fingers or prongs from the strip, bending these at right angles and passing them through the bar and clamping them on the opposite side, rivets, screws, pins, solder, etc., being also used if desired. [84.]

3,236. Feb. 20, 1889. **Dyes, etc.** I. LEVINSKY, Minihull-treet, Manchester.

Relates to the preparation of thiomethylidene and sulpho acid thereof, and the production thereof of azo dyes of red shades. The new base is prepared by heating thiomethylidene (1.5.4) with sulphur for several hours at 170°-240° C. The product is dissolved in dilute sulphuric acid, and the sulphate of the base is precipitated by addition of water. The diazo compound of the base is prepared in the usual manner by the action of sodium nitrate upon its sulphate. Azo colouring matters are produced by combining the diazo compound with phenols of their sulpho acids, such as beta-naphthol-alpha-monosulpho acid, which yields a colouring matter dyeing unretarded cotton a bright red. The sulpho acid of the base is prepared by heating the dry sulphate with fuming sulphuric acid, of 15-30 per cent. anhydrous acid, in a water bath until soluble in carbonate of soda. The sulpho acid is then converted into its diazo compound and azo colouring matters are obtained by combining this with phenols or their sulpho acids; beta-naphthol for instance yields a bright red dye. The less soluble dyes obtained by these processes are rendered soluble by conversion into their sulphate combinations which dye yellow to red, but are changed to reds when the dyed material is passed through an alkaline solution. [64.]

3,067. Feb. 21, 1889. **Woven fabrics.** J. S. AUSTIN, Kirkstall, near Huddersfield.

Twills, hopsacks, and other like double or backed fabrics are provided, as shewn, with a tacking warp *a*, and, if desired, with a tacking weft *c*, in addition to the usual warps *b*, and weft *c*. The arrangement of the threads may be reversed, i.e., *c* may be the warp, and *a*, *b* and *d* the wefts. [64.]

3,092. Feb. 21, 1889. **Pile fabrics.** H. ROUSE, North Brook Mills, Bradford.

The warp and weft are of the same material, and are dyed to the colour of the piece before weaving. [64.]

3,151. Feb. 22, 1889. **Tubes for spinning, etc.** C. H. SMITH, Field Head Mills, Bradford.

In order to reduce the friction between the revolving tube and the fixed spindle, and also to facilitate lubrication, the inner surface of the tube is formed with a helical groove terminating near the top in an annular recess. [64.]

3,152. Feb. 22, 1889. **Looms.** J. F. and H. ROUSE, North Brook Mills, Bradford.

Shedding mechanism.—A positive motion is imparted to the heads by the use of extra tappets *A*, acting on them from below and in conjunction with the ordinary tappets which act on them from above, and work loose on the shaft *G*. The tappets *A* are mounted on a shaft *L*, which through bevel and spur gearing from the shaft *G*. The projections *B* act on additional treadle levers *M*, which are connected by cords directly to the heads, or by rods to intermediate levers which will give the required motion to the heads. The arrangement may be modified. [84.]

3,159. Feb. 22, 1889. **Sizes, etc. for fabrics.** B. HANNAN, 42, Bath-street, Glasgow.

Preventing decomposition of the sizes and similar finishes used in thickening or stiffening cotton goods, linen goods, paper for walls or other purposes, and leather, by mixing them with sodium tetra-borate and sodium salicylate. [64.]

3,160. Feb. 22, 1889. **Carpets.** F. B. FAWCETT, 44, Connerston-road, Kilderminster.

In weaving Brussels and velvet carpets the count or pitch in the rod is about one-half the count as woven, whereby increased scope of frames of colours, and economy in the figure warps are obtained. [64.]

3,171. Feb. 22, 1889. **Clearing yarns.** H. TAYLOR, Varley-street, Oldham-road, Manchester.

Improvements on the invention described in the Specification No. 3,132, A. B. 1889. In order to prevent the combs or dents from becoming choked with dirt, etc., either the yarns or the combs are moved vertically or otherwise, so that the points in the combs at which the yarn is passed through are continually changed. Several arrangements are described by which this may be effected. The yarn may be raised, and lowered by an oscillating or revolving cam, etc., or by a slide operated in any suitable manner; or the combs or dents may be oscillated or revolved. [84.]

3,194. Feb. 22, 1889. **Cooling cloth.** A. ARMITAGE, Newton, and T. CARTER, Taylor Hill, both of Huddersfield.

After leaving the tentering machine, the cloth is passed through a rectangular box, and currents of cold air are forced upon both sides of it through longitudinal slits from passages, which are supplied by a fan. The air from the fan passage is first divided by a partition into two currents for the upper and lower passages, and these are further divided and dis-

tributed to the right and left respectively by an adjustable diaphragm. [64.]

3,220. Feb. 22, 1889. **Cutting patterns of lace.** E. H. HESSON, Cuttins Grove, New Galloway, Nottinghamshire.

Definite length of lace or other fabric, corresponding to the diameter of a spring feed roller are cut by pivoted knives, acting in conjunction with the bed-plate. A spring presser-plate holds the fabric on the bed-plate during the cutting operation, and if lifted out of action at the required moment by cam on a shaft. The knife is operated by a cam on a transverse shaft, and the whole is driven by varying-speed gear from a fly-wheel and a handle upon it. The severed pieces slide down inclined plates. The feed roller has circumferential grooves, in which are plate springs to prevent the fabric from lapping around it. [14.]

3,238. Feb. 23, 1889. **Looms.** X. DEPIERRE, 40, Rue Pascal, Paris.

Picking apparatus.—The picker is constructed from a simple piece of hide, the wings of the blank being folded over to meet whilst the upper part is folded forward around a mandrel, so that its free edge meets the upper edges of the wings. Flanges may be formed, and the parts may be held together by staples. The picking strap end is threaded through a slot in the neck of the picker, or it may be connected to the latter by a bent wire passing through a small hole, the free ends being inserted in a hole in the strap end and bent outwards. [64.]

3,236. Feb. 23, 1889. **Spinning.** J. BULLOUGH, Globe Works, Acerrington.

Grinding apparatus.—Relates to adjusting and testing the revolving flats and to grinding the flats and doffer. The distance between the flats and cylinder is determined by means of a dummy flat covered with red lead, etc., or formed of lead or other soft material which, when the flat is lowered sufficiently, will become scored by the card teeth of the cylinder. Normally this dummy flat is supported by shoes of known thickness at the same height as the working flats, and is ground along with them, the shoes being removed and the flat coated if necessary, when the testing operation is performed. If the removal of the shoes is not sufficient to bring the flat into contact with the cylinder, the whole of the flats are lowered by definite amounts until contact takes place. The flat may be formed of ebonite, etc., with wax, pitch, or other suitable material placed in longitudinal grooves; or it may be clothed with wire if desired, a head or rib being formed along the heel or leading edge of the flat. The removable shoes may in this case be dispensed with, the necessary lead being obtained through the increased width of the flat. If desired, the grinding bar described in the Specification No. 3,401, A. D. 1888, may be used instead of the dummy flat; or the electrical method above described may be combined with the electrical method described in the Specification No. 1,849 A. D. 1886.

The flats and doffer are ground by the teeth of the main cylinder, their teeth being for this purpose caused to engage with those of the cylinder; and in order to determine whether or not the flats are being ground uniformly they are coated or sprinkled with pipe clay or colouring matter which is removed by the teeth of the cylinder in grinding. Arrangements are described for sprinkling the colour on to the flats. A line of colouring matter is placed across the doffer for the same purpose.

To keep the flats and cylinder cool during the grinding operation the flats are caused to take over a cloth-covered roller dipping into a water trough.

The flats are removed quickly during the grinding and testing operation by being driven through worm gearing and a small pulley from a large pulley on the cylinder shaft. [14.]

3,239. Feb. 23, 1889. **Looms.** S. J. GIMKE, 316, Bineburn-road, and G. ATKINSON, 34, Portland-street, both in Acerrington.

Warp, Dampings.—A cylindrical trough *L*, extending across the loom beneath the warp *2*, contains water, water and soap, or water and glycerine, etc., and is slotted to receive a bar *7* in the manner shewn. A covering of flannel *8*, or other porous material, hangs loosely in the liquid, and takes up the latter for damping the warp *2* as it passes over it. The bar is pivoted essentially in the ends of the trough to allow of a slight oscillating motion. [64.]

3,255. Feb. 23, 1889. **Looms.** T. TAYLOR and T. DAVENPORT, both of Oldham, and JONES, Limited, Bolton.

The lay *L* consists of a metal bed or rail *s* with wood coverings *se*, and to it the shuttle boxes *R* are bolted, as at *3*, or are otherwise detachably secured. [64.]

3,269. Feb. 23, 1889. **Looms.** J. STANBORE, Gulseley, 22, Fountain-grove, Kirkstall, both near Leeds.

Picking motion.—The picker *T* is connected by straps *T₁*, *T₂* with pulleys *A*, *L*. The pulley *A*, carried by the loom frame, is connected by a chain or band *D* and a spring *E* with a tappet-worked lever *2*, and carries a stud *A₁* with a disc *A₂* engaging in a slide *A₃* on the lay. The spring *E* being distended the lay moves forward, upon which the slide *A₃* clears the disc *A₂*, and allows the wire *A₁* to operate the picker. A second spring acting on the pulley *L* returns the picker. In Jacquard looms a rod from the Jacquard or dobby is connected with the tappet-worked lever. [64.]

3,275. Feb. 23, 1889. **Jacquard cards.** C. A. TOWS, 23, Wimburne-road, Nottingham.

Relates to apparatus for reading and punching Jacquard cards for lace-making, weaving, and the like. The wale strings *H* are permanently connected to supplementary needles

B, which engage with the selector needles *A₁* by means of male and female spring connections. The needles *B* are carried in slays *G*, *D*, a third slay *G* limiting their motion. The slay *C* is adjustable on bars *E*, whilst *D* and *G* are adjustable on sleeves *C₁* of the slay *C*. The needles *B* and slays are removed to insert lashes by reading in the usual manner; the strings are then removed from the reading frame and transferred to the punching machine, the slay *G* being moved forward to project the needles *B*; the needles *A₁* are then pushed back, and each one engages with its supplementary needle; the slay *G* is then moved back so as to bring the needles *B* and *A₁* to be withdrawn by those wale strings which are pressed off in the usual manner. Some of the details may be modified. [84.]

3,321. Feb. 25, 1889. **Ring spinning and doubling.** J. DICKINSON, Freshwick, near Manchester.

In order to prevent ballooning on ring frames, the thread guides *f*, when the winding is taking place on the lower parts of the bobbins, are supported at a very short distance above the points of the spindles, and are raised, automatically or by hand, during the winding on the upper parts of the bobbins. The guide *f* is fixed in a hinged board *e*, the hinge being formed by a metal plate *i* secured to the under side of the board and bent into a curve which takes a longitudinal rod *g*, which is provided with a handle *s* or is connected by cam or lever arrangements with some suitable part of the machine. In order that the boards *e* may be raised independently for piecing broken ends, etc., and also together by turning the rod *g* the curl of the plate *i* is slotted and a stud *t* takes into the rod *g* throughout the slot. In a modification the boards are hinged in the ordinary manner to a longitudinal board itself hinged to the roller beam. [84.]

3,333. Feb. 25, 1889. **Dyes.** T. R. SHILLITO, 59, Chancery-lane, London.—(J. R. Greig and Co., Basel, Switzerland.)

Triacetic acid series.—Relates to the synthesis of triacetic acids and their homologues. Consists in the oxidation of salicylic acid or beta-cresotic acid with one of the following methane derivatives, viz., methyl alcohol, formaldehyde, methanol, dioxydiphenylmethane dicarbonic acid, or dioxydiphenylmethane dicarbonic acid in solution in sulphuric acid by means of nitrous acid. For example, salicylic acid dissolved in sulphuric acid and methyl alcohol is heated to 70° C, and nitrate of sodium is added. The new product is precipitated by pouring the green coloured liquid produced into water, and the precipitate is washed, saturated with alkali, and dried. [44.]

3,399. Feb. 26, 1889. **Cutting woff-pile fabrics.** O. DNEY, 10, Newton-street, Piccadilly, Manchester.

The fabric passes over rollers, and is lapped or oriented by swinging rollers upon small rollers and a drum. The drum is rotated slowly by ratchet gearing operated from a crank, and the folds of the cloth are gradually drawn forward between the drum and an endless band, which is driven at the same rate as the drum by chain and toothed-wheel gearing. The fabric is taken off from the top folds on the endless band, and returned over tension bars and guide rollers to the knife. [84.]

3,441. Feb. 26, 1889. **Dyes.** C. DEXTERS, H. BULL, and J. HALL, all of Clayton, near Manchester.

Phthalides.—Relates to the production of a colouring matter from phenol-phthalin by treating it with sulphuric or glacial acetic acid, or both, and with nitric acid or a nitrate. Consists in nitrating phenol-phthalin with the production of tetra-nitro phthalin. Four examples of suitable processes of nitration are described. In one case phenol-phthalin is dissolved in five times its weight of sulphuric acid of 108° Tw. at about 55° C, the mixture is allowed to cool to about 20° C, and then nitric acid of sp. gr. 1.48 is added. When a sample dissolves in dilute caustic soda with a yellow colour the product is precipitated by pouring into water, the precipitate is dried and re-crystallised from a mixture of phenol and alcohol. The yellow crystalline powder forms alkaline salts, soluble in water, which dye animal fabrics in a neutral bath a deep yellow colour. In another example acetic acid is employed in the first stage instead of sulphuric acid. And in another case a sulho-acid of phenol-phthalin is first obtained, and this is treated with sulphuric and nitric acids. [64.]

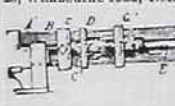
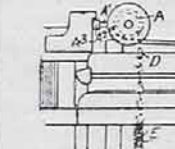
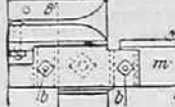
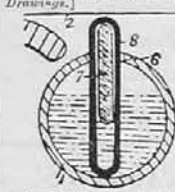
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Shaw, Wright, Stockport: Supp. i.
Smith Patents Co., Sheffield: Supp. i. June 14th.
Stone and Burnett, Preston: vi.
Stubbs, Joseph, Manchester: vii.*
Sykes, John, and Sons, Huddersfield: iii.
Tatham, John, and Sons, Limited, Rochdale: viii.
Taylor, Lang, and Co., Ltd., Stalybridge: v.
Thompson, W. P., and Co., Manchester: 53.
Unsworth, Geo., Manchester: x. July 5th.
Wallwork, Henry, and Co., Manchester: xv. April 26.
Walton and Halstead, Hebden Bridge: iv. of cover. March 22nd.
Whitely, John, and Sons, Halifax: iv. June 28th.
Wilson, Bros., Cornholme, Todmorden: vi.*

* This advertisement appeared last week, July 19th; it will appear again next week, July 26th.

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