

The Textile Mercury:

A Representative Weekly Journal for
Spinners, Manufacturers, Machinists, Bleachers, Colourists, and Merchants,
 In all Branches of the Textile Industries.

Vol. III.—No. 88.

SATURDAY, DECEMBER 27TH, 1890.

PRICE
 THREEPENCE.
 Annual Subscription, 12s Post Free.
 Six Months " " 6s " " "
 Three " " 3s " " "
 For Foreign Subscriptions, see first column below.

BACK NUMBERS of the *Textile Mercury* WANTED for the following dates:—Nov. 23rd, 1889; Dec. 7th, 1889. Apply Publishing Department, *Textile Mercury*, 23, Strutt-st., Manchester.

The Textile Mercury.

OFFICES: 23, STRUTT STREET, MANCHESTER:
 MARSDEN & Co., Publishers.

LONDON OFFICE—121, NEWGATE STREET, E.C.:
 Mr. C. VERNON, Representative.

NEW YORK (U.S.A.) OFFICE—95, DUANE STREET,
 NEW YORK CITY
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The next number of "The Textile Mercury" to be published on January 3rd, will commence the Fourth Volume, and will be a specially large one. Copies should be ordered early through newsagents.

Current Topics.

WHICH IS ENGLAND'S PRINCIPAL INDUSTRY?

It has long been thought that agriculture was the greatest of English industries, and looked at from some points such is undoubtedly the case. At the last census, however, it was shown that so far as the number of people were concerned, it had to take a second place, the figures revealing the startling fact that the emigration of workpeople from the land to the manufacturing towns had been so large as to turn the scale in favour of the textile industries. The continued and increasingly adverse circumstances of agriculture during the decade which closes in a few days will no doubt have led to the continuance of this movement, and the extent thereof will no doubt be shown by the figures of the forthcoming census, for which preparations are now being made. If this be the case it will be obvious that the united textile industries of the country will far outweigh in importance and outnumber in the employment of the people those of any other. The perception of this truth ought to make the textile industries much more self-respecting than they have been, and by the union of their influence thus command it from others. The future will need all their combined influence and power to protect them from the aggressions which reckless and ignorant men seem determined to make.

THE GENERAL WEAVING LIST.

We regret to learn that the Operatives' Associations have rejected the new weaving list upon which so much time and labour have been spent. We understand that at a meeting held on Saturday last at Bury the question was finally brought forward at a general meeting of representatives from the various weaving districts. It was debated for four or five hours, and then adjourned until Sunday morning. In the resumed debate another four or five hours were consumed, when the question was put to the vote, the division, we believe, shewing 23 in favour and 30 against. This is a result which is deeply to be regretted, and, most of all, in the interests of the operatives themselves. It was brought about apparently by a foolish misconception of the real object of the draft of the new list. They have foolishly concluded that it was an opportunity not to be missed for securing a general advance of wages, and for this impression they are indebted to Mr. Luke Park, one of their Preston officials, who has led the opposition. Should the list fall to the ground it will have the effect of excluding every weaving district from the ad-

vantages of any extension of trade which may occur. This will inevitably locate itself in the district which is highly privileged by existing conditions, namely, Burnley and the out-lying districts governed by the Burnley Weaving List. They will, indeed, have deliberately shut themselves and their children from any share in the employment which their increasing numbers demand. Every delegate who opposed the resolution for the adoption of the new list ought to have asked himself how many new weavesheds had been erected in his own district within the past ten years, and then have asked the same question regarding that of Burnley. The answer would have been instructive. It would have told distinctly how for the past ten years they have been driving from their midst all manufacturing enterprise. The question of securing an advance could have been dealt with on its own merits at any suitable time. The present, however, is not one for such an attempt to be made in the weaving branch of the industry. Circumstances at present tend very strongly in the other direction, and would certainly justify the serious consideration by manufacturers whether the circumstances of the trade are not such as to justify a reduction of 10 per cent. The prices now being obtained for goods in Manchester are from 2½ to 5 and even in some cases 7½ per cent. below what they ought to be to return cost of production and allow the employer the assurance of earnings very little better than any four-loom weaver can take home at the week-end.

THE STRIKE AT MANNINGHAM.

One result of the strike at the mills of Messrs. Lister and Company, Limited, has been to draw the attention of the Bradford public to the changes that have taken place of late years in the conditions under which the manufactures of this country are conducted, as compared with those that prevailed in former years. The opportunity for enforcing a lesson upon the operatives of the district was too good to be lost, and several have availed themselves of it to some purpose. There have only been two strikes of any importance at Manningham Mills during the past fifty years. Lister and Company were amongst the first to support and sign a petition in favour of reducing the factory hours from sixty to fifty-six, and when their men demurred to working the factory hours a bitter and disastrous struggle ensued, the strike resulting in the discomfiture of the men. Another strike took place when Messrs. Lister, harassed by the ever-increasing Continental competition against which their silk-yarn spinning department had to contend, announced that a reduction in wages was necessary to enable them to carry on the business at a profit. In the early days of silk spinning the firm could export to the Continent, the patent silk-combing

machine enabling Mr. Lister to produce yarn of unrivalled excellence. In process of time, however, and with the assistance of Mr. Lister's machinery, foreign spinners not only succeeded in supplying their own wants, but in exporting to this country on an extensive scale, and they are still doing so, thanks to the long hours, cheap labour, and absence of tariffs on goods imported by us, which weigh in their favour. In the case of the flax trade of Yorkshire the course of events has been similar to that of the silk yarn industry up to a certain point. We supplied the foreigner with machinery by which he was enabled to turn out a yarn that was not only cheaper, but frequently more level than English yarns. The result was that Leeds lost its flax trade almost entirely. When Messrs. Lister found that their silk yarn trade was suffering they insisted on being placed in a position to compete with the Continent, and finally the men had to yield. A similar state of things seems to have arisen again. Owing to the McKinley Tariff Act the American plush trade has been annihilated, and under such a disastrous state of things the directors insist upon a reduction of the present wages, in order, if possible, to keep a few of the looms going. Before the strike they had stopped a large number—something like 300. In pointing out these facts those who support the action of the firm say that Saltaire is practically in the same condition, and they state that the action of Messrs. Salt in negotiating for an American mill proves that the plush weavers remaining in this country will either have to accept lower wages or leave the trade. Messrs. Lister have undoubtedly a very strong case, and the statements of the strikers that their wages are not on the average so high as stated by the firm will not blind them to the fact that foreign tariffs are the direct cause of the present trouble. We trust that the time is not far distant when instead of fighting one another employers and employed will combine for mutual protection against the persistent attacks made upon them by foreigners. It is there that the solution of our difficulties lies, not in strikes at home. As far as the details of the Manningham strike are concerned, the directors of Lister and Co. passed a resolution on Monday to the effect that the engines of the velvet department be started on Monday, the 29th inst., and the workpeople are invited to return to work at that time at the rate of wages offered. On Tuesday morning, the 30th, the managers will be open to engage fresh hands for such places as may then be vacant, and then under no circumstances will the new workpeople be discharged for the old ones. The directors state that hitherto they have found no difficulty in finding weavers who are able to quickly learn the plush weaving, and that they do not anticipate any difficulty in the immediate future. The finishers were thrown out of employment after Wednesday.

THE OVERTIME QUESTION IN KIDDERMINSTER.

As announced by us last week the difficulty with reference to the question of overtime has been settled by the employers having given way. We are now in possession of fuller details concerning the final negotiations between masters and men. The deputation which waited upon the firm consisted of the president, secretary, and treasurer of the Weavers' Association, and the members of Messrs. Brinton's Shop Committee. At a subsequent meeting of the members of the Association the President stated that Messrs. Brinton listened

with great respect to all the arguments that were urged against overtime, and they assured the deputation that they were as much against overtime as the men were. They disliked it; for it was more expensive to them, and they would rather keep to full time than have recourse thereto. Then reference was made to the North, where men placed no restrictions in the way of masters dealing with special orders when they came in. They pointed to the fact that they could not see the reason of the men refusing to work overtime now, for they were close upon Christmas, and as there were more than ordinary repairs to be carried out, the holidays would be longer than usual. They had some orders which had to be completed by a given time, or they would not be accepted, and the inevitable effect of the men refusing to work as desired would be that the orders which were urgently needed would have to go to the North, and Kidderminster would assuredly lose its position as the centre of the carpet trade. The deputation could not gainsay some of the points which had been urged on that question; but they ventured to remind the directors that a considerable number of men were far from being fully employed, and that if the men could obtain the materials they could produce at least one-third more work than was now being done, without having recourse to overtime. The interview all through was a very cordial one, and while the directors said they were bound to carry out the arrangements which had been made, the deputation courteously, but firmly, adhered to the point that the men could not in any way sanction the principle of overtime, and expressed the hope that the directors would see their way to withdraw the order. Although the opinion was expressed at the meeting of the Association that nothing more would be heard of the overtime question, we shall be very much surprised if such be the case. The difficulties referred to by Messrs. Brinton are common to the whole of the Kidderminster carpet trade, and it is unlikely that the employers will rest satisfied until they possess the same advantages as their competitors in the North.

THE HOME SECRETARY'S FACTORY BILL.

The Home Secretary is said to be at present deeply engaged in the elaboration of his measure for the further amendment of the Factory Act. We presume this duty is undertaken by him in fulfilment of the obligations he assumed by sending his ambassadors extraordinary to the Berlin Imperial Labour Conference. He hopes to push the measure through this session. Its ostensible object is the regulation and inspection of workshops, which if effectually carried out would lead to the suppression of sweating, and this, it is believed, is the real aim of the Home Secretary. "Mr. Matthews," says the *Daily Chronicle*, "has been making extensive enquiries, and has sought help and enlightenment from every one likely to be able to assist him. He is now understood to have made up his mind as to the leading features of the measure, one of which it is not improbable may be the increase of age of half-timers from 10 to 12, and the protection of whole-timers against too premature an occupation. Mr. Matthews is believed to be anxious to make his bill a really efficient and strong working measure." We have never been particularly struck with the evidence of any great capacity for legislation in Mr. Matthews, and we hardly expect this attempt will increase his reputation in that respect, es-

pecially if the last-mentioned points are an accurate forecast.

THE LINEN INDUSTRY IN AUSTRIA.

Flax growing, with its domestic manufacture, has been languishing in Austria for some time, and has declined so far as to convince observers that its extinction is not far distant unless steps are taken to reorganise it on modern lines. Recognising the true conditions, the Vienna *Landwirtschaftliche Zeitung*, expressing a desire to see this industry once more in a flourishing condition in Austria, recommends as a move in the proper direction that the agricultural societies should unite in forming confederations which, with the assistance of experts, should adopt measures for bringing the advantages of modern invention to bear upon the flax industry. The paper goes on to say that although the days of domestic weaving and spinning of flax are passed, yet the loss may be replaced by preparing the raw material so as to fit it for the mechanical process, as well as by adopting more scientific methods of cultivation than those hitherto in vogue, so as to obviate the necessity of drawing from foreign sources the necessary sowing flax. It would devolve upon the confederations to instruct farmers as to the best methods of cultivation and preparation of the material, which would then (as in Belgium) be sold, and in exchange such quantities of linen would be obtained as would suffice for domestic purposes. If these or similar steps were taken, says the paper, the result would be a gradual revival of the Austrian flax industry. Undoubtedly there is some good sense in these remarks of our Vienna contemporary, but it ignores one great element which has done much to bring about a decline of the linen manufacture not only in Austria but many other countries as well. This is the increasing adoption of cotton for personal wear. Formerly linen was almost universal, but the greater suitability of cotton for this purpose as well as its greater cheapness has caused the displacement of the former fibre. Linen now holds its own only by the excellence of its qualities for household purposes, as in table and tray cloths, serviettes, etc. For bed wear it has quite disappeared, and very properly so. We doubt whether by any steps that can easily be taken or that are likely to be tried, it will be possible to rejuvenate the flax industry of Austria.

PERUVIAN COTTON.

Peruvian cottons are well known articles in Liverpool; they consist mainly of two varieties, native and exotic. The latter is grown from seed introduced from the cotton states of the United States, and yields what are known in the market as the smooth cottons. The native variety is the product of the *Gossypium Peruvianum*, a perennial shrub growing from 10 to 15 ft. high, found in the tropical countries of South America, and most abundantly in the coast districts. It flowers and bears fruit for several years, though most abundantly and of the best quality in the second, third, and fourth years of growth. The cotton yielded by this plant is long-stapled, harsh, and strong, and excellently suited for admixture with wool for many purposes of manufacture. The great difficulty in Peru, as in most South American countries, in the way of getting increased supplies of everything, cotton included, is the scarcity of labour. After the abolition of slavery in 1845 efforts were made to increase the exports of the country in its natural products, but only a limited success attended the endeavour, chiefly on this account. Labour was drawn to

some extent from Chili, but mainly from China. But that sentiment which leads man to become an oppressor, and which seems ingrained in the descendants of the Spaniards in America, led them to treat the Chinese immigrants with such barbarity, and to permit the same to be practised by foreign settlers and managers of Peruvian plantations, that the Chinese Government have prohibited emigration to Peru. Notwithstanding the comparatively low prices that have prevailed during the past few years, cotton is cultivated with profit in the departments of Piura and Ica, and in the neighbourhood of Huacko, in the northern districts of the department of Lima. That from Piura and Ica is principally directed to the German markets, for mixture with woollen fabrics, being long in staple and of excellent quality. The major part of the production and export is from the department of Piura, where the output might each year be more and more developed did not the plantations on the higher lands suffer from drought, and those in the lower levels from floods. As the class of cotton is the tree plant, with perennial stalk, the plantations only require to be renewed after a lapse of several years, and no limit need be placed to the propagation. The amount exported in the year 1889 was 1,336,354 kilos. (2,939,939 lb.)

FAILURE OF THE PRESIDENT OF THE AMERICAN TARIFF LEAGUE.

The anti-tariff element in the United States is making a good deal of capital out of recent failures there. The irony of fate has been visible of late in several directions, but nowhere more conspicuously than in the misfortune that has befallen Mr. E. H. Ammidown, whose bankruptcy was announced recently. The trouble arose through the collapse of the Rittenhouse Manufacturing Company, with liabilities reaching £160,000. The Rittenhouse Company was organised in 1872, being incorporated under the laws of New Jersey, with an authorised capital of £100,000, of which £40,000 was paid up. The incorporators were Edward H. Ammidown, Charles H. Ammidown, and S. A. Clark. Since then various changes have been made in stockholders, and at the time of the assignment, the stock was held by four persons, E. H. Ammidown holding 80 per cent of it, and Mr. Edmund Le Breton Gardiner the largest portion of the balance. Mr. Gardiner was manager of the company, and Ammidown and Smith selling agents. The mill was a 10-set mill, with an annual production of blankets, shawls, overcoatings, etc., of between £140,000 and £160,000. Mr. Ammidown's affairs would be of little interest to us did we not happen to be aware that he is the president of that fighting protectionist body known as the American Protective League, which more than any other organisation has been a powerful aid to the framers and backers of the McKinley Bill. His downfall, therefore, is a heavy blow to the Protectionist cause, as the powers he can exert in furthering the principles he so firmly believes in will be considerably curtailed by recent events. We have no lesson to draw from Mr. Ammidown's collapse. Knowing him personally, we may, however, be permitted to suggest that he has been too fond of working for the good of others to enable him to do justice to himself. For the rest we will let others speak. Thus the *Boston Journal of Commerce* says:—

The individual assignment of Mr. E. H. Ammidown, of Ammidown and Smith, of New York, to his partner, Mr. Albert D. Smith, is more than a personal misfortune. Mr. Ammidown has not only for years been one of the bulwarks of Protection against the foreign hordes of Free Traders, but in

every large-minded public movement for the gain of American commerce, the uplifting of departmental morality, the encouragement of better business methods, his name has always been in the front rank.

This personal assignment is directly caused by Mr. Ammidown's personal endorsement of the Rittenhouse paper, and is indirectly a result of a faulty tariff drawn on political rather than on economic lines. The high tariff on the raw material has hampered the woollen mills more than the supposed compensatory duty has helped them, and the attempted remedy by the radical increase of the duty on goods, though without any diminution of the duty on wool, has come too late to prevent a personal embarrassment which is a misfortune to the entire community.

Articles.

A VOICE FROM BRADFORD.

We have on numerous occasions drawn attention to the manner in which English commerce and industry is affected, to its serious disadvantage, by the fiscal legislation of foreign countries. Russia, Germany, France, and Italy during the past few years appear to have been animated by one desire—to hamper the trade of this country and restrict it to the smallest dimensions. No sooner has one advance been made in their tariffs than, after seeing that the hated commerce of England with them has not been destroyed, preparations have been commenced for making another. The greatest offender in this respect is the United States, the country in which "the golden rule" is less regarded than in any other nation in the world, and in which the intense and concentrated development of selfishness in its worst aspects is hurrying it at express speed to economic, industrial, and commercial perdition. The unbridled license given to the worst sentiments of human nature in that country is laying the foundations of a catastrophe compared with which the Civil War will probably prove an insignificant event. And of all the countries in the world the United States has the least occasion to adopt a policy of this kind. The extent of its territory, its richness in everything that constitutes the elements of national prosperity, and the daring enterprise of its people, surpass those of the countries of the Old World many fold. Yet, not content with this, the leading manufacturing industries, which are concentrated and can easily cooperate with one another, have banded themselves closely together to rob without compunction the larger and more important agricultural and commercial interests. This has been accomplished by the imposition of successive tariff laws, each heavier than the preceding one, until the whole fabric of protection seems about to collapse in ruin. And no true prosperity can be enjoyed until this has occurred. The boasted freedom and liberty enjoyed under its political institutions are a delusion and a snare, for now, when the party in office has been utterly routed at the polls by the agricultural interests, and is discredited and disgraced, office, pay, and power remain in its hands for a couple of years. Knowing as everybody does the antecedents of this party, does anyone doubt that it will avail itself of this to commit all the deprecation upon the public interest of which it is capable? To believe otherwise would be to believe that vampires could and would suddenly transform themselves into angels of light. There is no need to wonder that Mr. Jay Gould, the Railway King, sighs for the modification of the American constitution and a change in the direction of that of England, where, when a ruling party has suffered such a defeat as that inflicted upon the Republi-

can Party, it must at once surrender everything to those to whom the nation has given its confidence. Our Yorkshire friends have suffered heavily from the selfish machinations of this party, and a great scarcity of employment is experienced in this bitter and inclement winter in the houses of the working people, bringing in want and suffering through no fault of the inmates. There are many other interests affected besides those of the textile industries, and in a similar adverse way. Is it not pertinent, therefore, to ask whether these suffering people have not a strong claim upon the Government for protection from the effects flowing from the selfish and unfriendly legislation of a foreign power?

This case is entirely different from one in which by the operation of unrestricted commerce the products of the land come into successful competition with those of our own. The protectionist policy of the manufacturing industries of the United States is exactly analogous to that of the land-owning classes of this country during the first half of the present century, only much worse: a policy that, had it not been for the vast natural resources of the country, would have been accompanied by a correspondingly greater amount of misery. The wicked ingenuity of the same political party is evidenced in the new copyright law just passed. After plundering our authors and publishers since the country became independent, it has now, while professing to do an act of justice to these parties, intensified the evil by attacking the interests of every working man in the letterpress printing trade. The effects of this will not be long before they are seen.

France seems bent on doing all she can to emulate the United States in her commercial policy, as may easily be seen by a study of the details of the new Tariff she is formulating, which was recently translated for our columns. Against this imposition we have a strong right to protest. The various concessions which France made, from the Cobden treaty to the fall of the Empire, were obtained from this country by the surrender of taxes imposed upon products of her own, and notably upon silks and wines. When making these changes in our fiscal system for France we made corresponding ones for other countries of the continent as well. Now France by her reversion to a protective system having withdrawn all the remissions made in her tariff in our favour, has no longer the slightest equitable claim to the enjoyment of the grants we made in return. The other countries which have gone on the same path are in just the same predicament, and ought to be treated accordingly. This is clearly the belief of the Bradford merchants and manufacturers, as will be gathered from the following condensed report of a special meeting held yesterday week for the purpose of considering and deciding in regard to resolutions on the French Customs Tariff Bill now before the French Chamber of Deputies:

Mr. G. J. J. Hoffmann presided, and explained that a circular had been sent out by the Government asking what would be the effect of the proposed tariffs on the trade of the district. Sir Henry Mitchell moved the following resolutions:—"That, in view of the great falling off in the exports from this district to France which resulted from the last revision of the French Customs tariff, and seeing that the French can and do successfully compete with us, not only in all neutral markets, but also in our own, as is shown by the fact that during the year 1889 our imports of woollen manufactures from France amounted to £6,418,000, whilst our exports to France of the same class of goods were during the same period £3,000,000 only, it would appear that in any further revision of the French tariff we would have a right to expect a reduction rather than an increase on the duties now levied. That,

seeing the greatly increased import duties proposed in the Customs Tariff Bill now before the French Chamber of Deputies to be levied on woollen manufactures imported into France from this country as compared with the duties under the Commercial Treaty of 1860, when special advantages to French products were accorded by this country, this Chamber is of opinion that the proposed new duties are not only very unfair towards this country, but are not warranted by the state of the woollen industry in France, and that it is desirable that representations be at once made by her Majesty's Government to the French Government with a view to a modification of the proposed duties being effected. That, in the event of a reduction on the existing conventional tariff rates not being obtainable, this Chamber urges upon her Majesty's Government the desirability of increasing the duties now levied on wines and spirits imported into this country from France. That this Chamber begs to call the attention of her Majesty's Government to the fact that out of a total export of manufactured articles to France of £8,238,225, woollen and worsted goods amount to £3,569,708, or 43 per cent. There was considerable discussion on the resolutions, but they were ultimately passed by 11 votes to five.

We would strongly deprecate any one concluding that the Bradford Chamber of Commerce has gone over to a belief in or an advocacy of the principles of protection. No such inference would be true. We ourselves have as firm a belief in the principles of free trade as we have in Christian ethics, yet, as all men can easily see both good principles and good laws are broken by bad men, and the latter would not command much respect were the power of the policeman not behind them. And so in a sense with the former; little regard will be paid to them, as is very evident, unless a corresponding power exists to compel it. This power is that of retaliation, and the adoption of other legislative means of protecting from such attacks our industry and commerce. We trust, therefore, that the subject will soon engage the serious attention of the Government.

The resolution of the Bradford Chamber has naturally given rise to a considerable amount of comment, and complacent local critics presume to condemn the retaliationists on the ground that they are reversing a policy which has been advocated by the Chamber for forty years—a very poor specimen of argument. The fact of the matter is, that as far as Bradford is concerned, if a poll of the electorate were taken today there would be an overwhelming majority in favour of retaliation. The question is no longer one of mere generalities with the Yorkshire folk. It is one in which their interest is quickened by the existence of the empty stomachs around them, and it is folly to attempt to argue that if the Government acted in accordance with the resolution, as passed by Sir Henry Mitchell and his friends, we should be the only sufferers. The only way to bring these obstinate foreign protectionists to their senses is to give them a dose of the medicine they are so fond of administering themselves.

PIEDMONTESE HEMP.

Hemp, the *Cannabis sativa* of commerce, is a well-known fibrous plant. In France it is termed *Chanvre*; in Germany, *Hanf*. It is an exogen and annual, of almost universal distribution, and growing to various heights according to the circumstances of its cultivation. In eastern countries it is grown largely for its yielding an intoxicating liquor. In Europe it is cultivated for the valuable fibre it produces. The seeds of the plant also afford oil. Amongst the best known hempes are those of Italy, which are highly prized amongst consumers of the fibre. Some interesting particulars of the cultivation of hemp in Italy have just been made public in a report of the French Consular agent in Bologna. He says that the Piedmontese hemp, which has always had a good reputation, is cultivated to the south-west of Carmagnola, on the banks of the Po, which at

this point separates the arrondissement of Pignerol, belonging to the province of Turin, from the arrondissement of Saluces, which belongs to that of Coni. The maximum product is 1,000 kilogrammes (2,200 lb.) per hectare (hectare = 2.47 acres) in the communes of Pancelieri, Vigone, Villafranca, Casalgrasso, and Polonghera. At the beginning of the present century the Piedmontese hempes were the only ones exported from Italy, and it has been the custom to retain the name in trade ever since the Bologna hemp came into use. In Emilia the main cultivation of hemp extends to the east of the Panaro, between the Po and the Apennines, over the four provinces of Bologna, Ferrona, Ravenna, and Forli. The extent of this cultivation has never been accurately ascertained, but the Chamber of Commerce of Bologna has estimated that in that province alone the hemp harvest amounted in 1879 to 138,806 quintals, and in 1880 to 163,730 quintals. No returns have been published since, except for 1889, when the estimate was 126,063 quintals. The product of the province of Ferrara is about half as much again. Twenty years ago the Neapolitan farmers adopted hemp to take the place of madder. At the present time, the provinces of Naples and Caserta produce about 200,000 quintals. The total product, therefore, of the nine provinces of Italy which are engaged in this cultivation, with the addition of Sicily, may be estimated at 850,000 quintals annually. The export was never more than 600,000 quintals, and is now reduced to about 400,000 quintals. In the two regions of the Po, hemp is grown in biennial rotation with cereals. The hemp fields there are established on alluvial soil, which is rich, deep, light, and fresh. The hemp fields of Naples are more exposed to drought; and in them the soil is prepared with the spade, instead of, as in Piedmont, with the plough; it is gone over twice, the first time very deeply. In Naples several manures are used: dung from the stable, sweepings from the city, leguminous plants, and specially the lupin, either green, or in the droppings of sheep; in Piedmont no manure is used but from the stable. In Piedmont, in March, about a hectolitre of hemp seed is sown at random over each hectare. The young plants are thinned out, and two successive weeding take place. In the Bologna district, not more than 70 are sown to the hectare, and the seed from the same soil is used, refreshed occasionally with seed from the Carmagnola. In the Naples district nothing is used but Bologna seed, which is renewed every year, experience having shown that a rapid degeneration takes place in the seed obtained on the spot. In Piedmont the hemp grows to a height of four metres; in Bologna, five metres and over, with less thickness at the base. In Naples it rarely exceeds two metres. In the latter district the growth of the hemp is protected by trees and vines, which separate the fields in the old Campanian manner, and are commonly trained to follow the movement of the sun. The process of soaking is usually performed in Piedmont in retting pools fed by running water. In the Bologna district the retting pools are in still water, and stones are used to keep the hemp submerged. Around Ferrara stones are often wanting, and the lumps of earth which are used instead make the water muddy, and this injures the quality of the product. In Romagna there are no retting pools, and the watercourses are used, to the detriment of their purity. In Bologna the mud of the retting pool is considered to be a good manure to cover plants fit for fodder with. In Naples all hempes used to be taken to the lake of Agnano, the waters there giving them a beauty and a suppleness which made up for the expense of transport. The drying up of this lake gave a temporary check to the cultivation of the hemp, but now it is taken to the Lake of Acara, the sulphurous waters of which favour the bleaching more than the softening of the rind. There were at one time in the suburbs of Ferrara two steam factories for the preparation of hemp without soaking, but the produce of these factories was everywhere rejected, as it was found they were liable to subsequent fermentation, and at the present time no hemp is prepared except by soaking. The Bolognese hemp is reported as being the most beautiful in Italy. It is almost white, with a shade of grey. It is supple, soft, tenacious, brilliant, and easily divided. Its filaments are slightly curled, it is very elastic and not brittle. It weaves very well, especially when moistened. This type is produced all over the province of Bologna, especially towards Budrio, as well as at Faenza (province of Ravenna), at Casaria (province of Forli), and around San Cesario (province of Modena). The hempes of the province of Ferrara, those of Finah (province of Modena), those of Lugo and of Massalombarda (province of Ravenna) are ropemakers' hempes. Returns show that the cultivation of hemp is especially remunerative in the Naples district, and it is extending there every year, while at Bologna it is stationary, and in Piedmont is diminishing.

Reviews of Books.

DIARY AND BUYERS' GUIDE. Manchester: HENRY BANNERMAN AND SONS, LIMITED, York-street.

This is the Annual issued by the well-known home-trade house of Henry Bannerman and Sons, Limited. The present one is, perhaps, the most excellent of the series, as might naturally be expected from the adoption of the suggestions accruing from experience.

Its contents consist of a brief yet well-written history of the house of Henry Bannerman and Sons, from its foundation to the present time, illustrated with portraits of the founder, his sons, and the leading men who have helped to give the firm its prominent position in manufacturing and commerce. Views of the mills, works, and warehouses are introduced, and also portraits of the directors, officials, heads of departments, and travellers employed by the house. As might naturally be expected, the whole forms an elegant commercial album of permanent interest. Messrs. Bannerman and Sons avail themselves of the opportunity afforded by the issue of this diary to impart instruction of a valuable character, by inserting therein essays upon various phases of the textile manufactures. The subject selected for treatment in the present issue is the manufacture of lace curtains, the matter being dealt with in a concise, well-written, popular little essay. A series of tables on income, wages, profits on sales, and kindred matters, make up the literary portion of the work, which is one of the best of its class that we have seen. This, however, is only what might naturally be expected, as it is chiefly the work of Mr. John Mortimer, the genial and pleasant chief cashier and head of the counting house, whose sketches as a descriptive writer upon country scenes around Manchester are so well known, and have been the source of pleasure to thousands of readers who have wanted to steal from their daily avocations in city mills and workshops and offices to the green fields and lanes beyond. By permission of Messrs. Bannerman we reprint in another column the history of their house.

GRANITE CLOTHES.—Our readers may remember being made acquainted, some months ago, with the wonderful production of threads from rock crystal by Professor Boys, and the no less amazing scientific purposes to which these filaments, so fine as hardly to be visible under a microscope, might be put. It seems that these threads will be as much at the service of sport as science, for if anglers can but handle what they will hardly be able to feel, fish will not be frightened by lines which they will certainly not be able to see, and yet will surely be caught by cords—if they can be called cords—which will bear a weight exceeding that of any fish that swims the seas. Mr. Andrew Lang, commenting upon this prospect, suggests that, if quartz can be made into gut, surely granite may become a textile fabric, and we may weave the Ross of Mull into coats and trousers. The colours of the granite in the Ross of Mull are excellently suited—how happy the term!—for these fabrics, and so man might be going about in garments of stone, and get their textile materials from the nearest quarry. When nature has provided asbestos, and gold, silver, and glass have been made into cloth, this would, after all, be nothing remarkable, but the difficulty of weaving invisible threads and of weaving impalpable fabrics will be likely to leave the Ross of Mull undisturbed for many generations yet to come.—*Ware-houseman.*

Designing.

NEW DESIGNS.

THE IMPORTATION OF FRENCH GOODS.

Filled as the commercial atmosphere at present is with tariffs and rumours of tariffs, retaliation, and such like, it may be well even for those not likely to be directly connected with such matters to consider calmly the real meaning of the measures alluded to. Speculators and those engaged in the export and import trade can only be relied on to give judgment as affecting the present; we must look elsewhere if we wish to obtain genuine insight into the why and the

wherefore of the measures that apparently threaten to overwhelm a great portion of our trade.

As a natural result of the stoppage of our exports to certain countries, an enquiry has been instituted concerning our imports, and during the past fortnight results have been presented to the public which are well worthy of attention. The threatened French tariff has brought forth statistics which clearly shew the large hold that France has on our home markets.

Sir Henry Mitchell, at a recent meeting of the Bradford Chamber of Commerce, fully demonstrated the fact that France exported to us very much more than we exported to her, particularly in the case of textile fabrics. Now about 50 per cent. of such textiles are classed as silks, and we shall be much surprised if the other 50 per cent. does not consist of the *more artistic* woollens and worsteds, etc.

Whether protection in the case of the United States or France will eventually be found to be serviceable no one can at present say; one firm goes out with its machinery, anticipating the continuance of such protection, another stops at home anticipating the re-adoption of something like free trade, and so for the present we must abide by the fact.

The facts stated above, however, do not depend on free trade or protection; they speak out and tell us that in artistic design we are

behind France, and the sooner we make amends the better for our home trade.

There is undoubtedly, as we have previously pointed out, room for great improvement in this direction; it does not seem that we lack so much in artistic design or in cloth construction, but rather in the combination of the two; we have our art designers, we have our cloth manufacturers; the designer makes a design and the manufacturer modifies it for applying to textiles, and probably spoils it. Against the extensive copying of French designs we cannot speak too strongly, and yet such copying only implies again that we have no *textile designers*, in other words no designers who truly realise the tone imparted to design by cloth construction. There is an old saying that the knowledge of a defect is half the cure; let us hope that this case will prove no exception to the rule.

FIGURED DRESS CLOTHS.

The type of figured textile demonstrated last week is capable of the widest application. Such designs applied to worsteds with a suitable choice of yarns and colourings will prove equally as effective as in the case of woollens. Of course fine effects cannot be produced on this system owing to the coarse sets required, but if the law that "the larger the surface and the more subdued the colouring and the smaller the surface and the more intense the colouring" be

observed, then a large variety of useful effects are capable of being produced.

In the case of cotton goods we should recommend the trial of a silk slubbing thread; silk waste has for a long period been used in a similar form in other cases and it would probably prove effective here.

Design A illustrates a method of showing up a small flush figure in a more effective manner than by simply letting it float on the ordinary ground. In this case plain has been used to surround the figure, and with the 3 and 1 or 2 and 2 will set fairly open, no difficulty would be experienced working this; but in the case of a close set, say where the 8 end sateen ground is employed, then a difficulty would be experienced in using this make, so similar effects possessing greater weaving capacity are resorted to. The twilled hopsack shewn in *Design B* gives a suitable effect, or the double plain *Design C* on the 4 and 4 rib as contrasting with the sateen sometimes proves very effective.

Some exceedingly beautiful results may be obtained by the employment of the double plain in unison with colour for such surroundings, which shall claim our attention in future numbers.

TARTAN CHECKS AND STRIPES.

"The girl of the period" is in a quandary to know whether the reflection in the mirror is from her own form or the family portrait of her grandmother adorning the wall opposite. From the present fashion in dress, and the bitterly severe winter, we seem to have glided imperceptibly into the good or bad old times when George the Third was king, of which the country retains a curiously clinging remembrance. Everything which hails from north of the Tweed is very popular, especially so in the French capital. The coarse cheviot heather mixture Tweed cloth, with its peat-reek-soot dyes of dirty black and grey with green and yellow from the whin-bush blossoms is quite *recherché*; so are Kilmarnock bonnets and night-caps. The beautiful products of Galashiels, Dumfries, and Innerleithen looms are simply tolerated; tartan combinations of the most vivid and staring contrasts are exhibited in every conceivable form; articles of wearing apparel, as dressing gowns, socks, pyjamas, neckties, suspenders, stockings, corsets, shoe cloths, gaiters, vests, etc., are all in demand, and we may anticipate the same rush at home if the severe weather should continue.

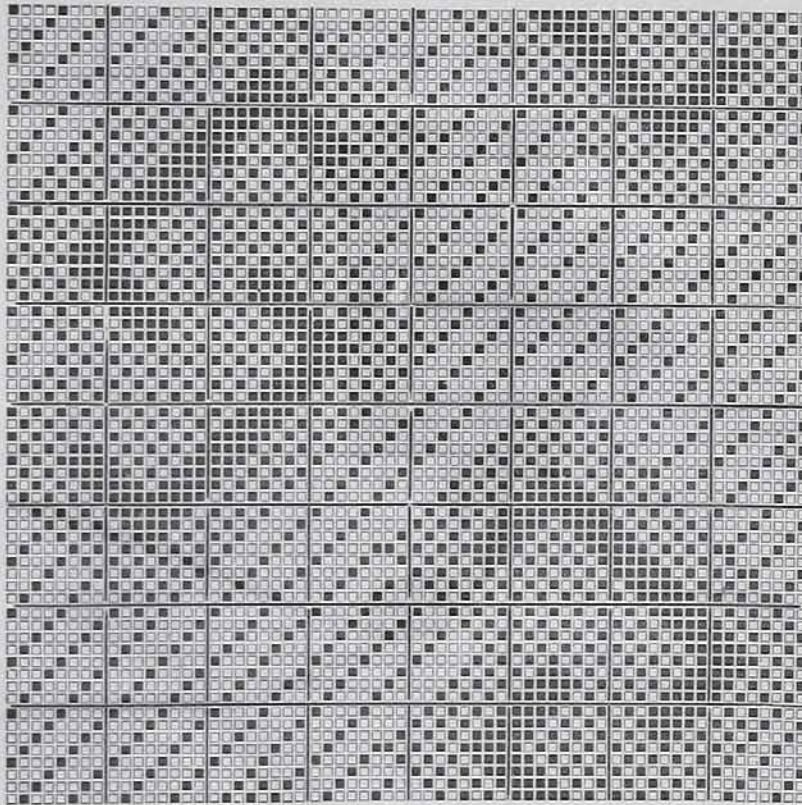
Our readers will find by referring to past issues of this journal full details of well-known Scotch tartan plaid patterns. We now give one or two more with different weaves (see pegging plans *No. 1* and *2*, with *No. 2* draft, *No. 1* having a straight-over draft): Reed 30, two in a dent, or 60 ends per inch, of 20's twist, and 60 picks per inch of 20's cotton weft and warp for the check patterns, and 40 picks per inch of 24's weft for the stripes.

No. 1.—Warp pattern of the Clan McNeil, 28 light blue, 28 black, 40 grass green, 8 black, 4 bright yellow, 4 white, 4 bright yellow, 8 black, 40 grass green, 28 light blue, total 192 stripe pattern; if for a check, weft pattern same as warp.

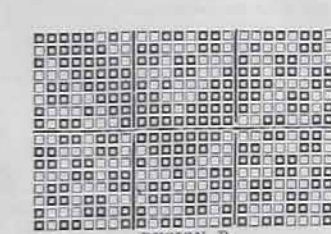
The Macintosh. No. 2.—Pattern for stripe: 4 black, 12 scarlet, 40 dark green, 12 scarlet, 20 royal blue, 72 scarlet, 20 royal blue, 12 scarlet, 40 dark green, 12 scarlet; total 224 ends. Check, weft pattern same as warp.

The Cameron. No. 3.—Pattern: 8 yellow, 8 blue, 8 red, 24 blue, 20 black, 20 green, 8 red, 4 green, 4 red, 16 green, 4 red, 4 green, 8 red, 20 green, 20 black, 24 blue, 8 red, 8 blue; total 216 ends. For stripe, check weft pattern same as warp.

The Gunn. No. 4.—Pattern stripe: 8 green, 36 deep blue, 8 green, 20 black, 40 green, 4 scarlet, 40 green, 20 black, 8 green, 36 deep blue; total 230 ends. For check, weft pattern same as warp, and to prevent mistakes let *No. 1* pegging plan with straight-over draft be used for the checks, and *No. 2* pegging plan and draft for the stripes in the four patterns given. By referring to our issue of June 28th under the heading of "Fancy cotton and silk tartan cloths," and the issues of August 30th, "Clan Tartans," it will be seen that we clearly stated the *advantages of these classes* of goods for the winter season.



DESIGN A.



DESIGN B.



DESIGN C.



DRAFT PLAN FOR No. 2.

No. 1 PEGGING PLAN FOR TARTAN CHECK.

No. 2 PEGGING PLAN FOR TARTAN STRIPE.

Machinery and Appliances.

AN IMPROVED STRAIGHT KNITTING MACHINE.

The hosiery and knit wear industry in the United States has grown to considerable dimensions, and if we may judge from the activity displayed in making what are claimed to be improvements in machinery, the manufacture is in a state of considerable vigour. We give here-with an illustration of a recently patented improvement for which considerable claims have been made.

Of its value our practical readers may form their own opinions after perusing a condensed report of the claims made on its behalf. The inventor claims

1. The combination, with the thread-carriers and their supporting guide-bars arranged in different horizontal planes, of a vertically-movable slide adapted to engage the said thread-carriers, a rock-shaft having a bar engaging said slide, a horizontally-movable slide by which the first-named slide is operated, means for operating said rock-shaft to cause the said vertically-movable slide to be engaged with one or the other of the said thread-carriers, as may be desired, and means for reciprocating the said horizontally-movable slide back and forth.

2. The combination, with the pattern chain H, having one or more cam projections U and mechanism for operating said chain, of the rock-shaft J, having arms I and K, the bar K', carried by said arms K, the vertically-movable slide L, engaged by the said bar and having a fork L', the thread-carriers adapted to be engaged by said fork, the horizontal guide-bars on which the said carriers reciprocate, the horizontally-movable slide O, by which said slide L is carried, and means for operating the said slide O.

3. The combination, with the vertically-movable presser bar, its actuating levers connected therewith, and the main lever, which operates the thread-carriers, of the cam-shaft having cams for operating the said lever and the said presser-bar actuating levers, and devices which when desired may be operated by the said main lever to render the presser-bar levers inoperative when it is desired that a misspess shall occur.

4. The combination, with the pattern chain H, having pins 24 and 25, of the lever 2, having the cam-plate 10, the pivoted dog 11, rocking and longitudinally movable shipper-rod 22, having the arms 4, 13, and 21, the rod 3, connecting said lever with said arm 4, the main lever Q, the cam-shaft B, having cams B' and 16, the levers 6, having the laterally movable rollers 17, engaged by the said arms 15, the rods 7, the levers 8, and the presser 13, carried by the said levers 8, to operate substantially as described.

5. The combination, with the pattern chain and its carrying-wheel, of a ratchet-wheel to operate said carrying-wheel, a pawl for engagement with said ratchet-wheel, a pawl-carrying lever, a cam-shaft having a cam to operate said lever, a pawl controlling rod, and means for reciprocating said rod and thereby placing it in position for engaging the tail of the pawl in each alternate upward movement of the pawl-carrying lever and thus rendering said pawl inoperative at each alternate rotation of the cam-shaft.

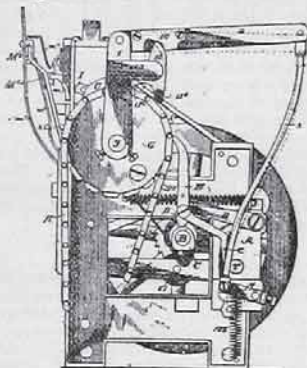
6. The combination, with the pattern chain H and its carrying-wheel G, of the ratchet-wheel F, to operate said carrying-wheel, the pawl E, having a depending tailpiece e, the lever D, by which said pawl is carried, the sliding rod T, its retracting-spring t, the main lever Q, in the path of which said rod is arranged, and the cam-shaft B, having the cams B' and C to actuate said levers Q and D, respectively.

7. A falling bar for straight knitting machines, composed of a main bar, provided with two independently-adjustable lifting pins, and a longitudinally-movable impact bar, having a single projection to engage said pins, as said impact bar is moved lengthwise of the said main bar.

8. A falling bar for straight knitting machines, composed of a main bar provided with two independently-adjustable lifting pins having racks, and a longitudinally-movable impact bar having a single projection to engage said pins as said impact bar is moved lengthwise of the said main bar, and provided also with adjusting shafts having pinions to engage said racks.

9. A falling bar for straight knitting machines, composed of a main bar provided with two independ-

ently-adjustable lifting pins, and a longitudinally-movable impact bar having a single projection to engage said pins as said impact bar is moved lengthwise of the said main bar, combined with a cam in operative connection with said impact bar having two acting surfaces to give two endwise movements to said impact bar.



10. A falling bar for straight knitting machines, composed of a main bar provided with two independently-adjustable lifting pins having racks, and a longitudinally-movable impact bar having a single projection to engage said pins as said impact bar is moved lengthwise of the said main bar, and provided also with adjustable shafts having pinions to engage said racks, combined with a cam in operative connection with said impact bar having two acting surfaces to give two endwise movements to said impact bar, substantially as set forth.

Bleaching, Dyeing, Printing, etc.

DYEING BLACK WITH DIAMINE AND ANILINE BLACKS.

Among the aniline colours which have lately been sent out, diamine black deserves special mention with regard to its application in dyeing. The colouring matter is sold in two shades, R and B, as a dark grey powder, and is a benzidine compound. It dyes cotton direct, grey to black shades. The dyeing is done in a boiling hot bath containing 3-5 grm. of soda and 10-15 grms. of sulphate of soda per litre. Instead of soda a similar quantity of soap, phosphate of soda, or other alkaline salt may be used.

The importance of diamine black lies in the fastness of the colour on cotton. For dyeing greys it is unsurpassed, and can be used for the production of various "mode" colours; for blacks it is not a success. If the cotton be first grounded with sumac and iron, fairly good results may be obtained, but much better results are got if the material, after dyeing with diamine black, be topped with aniline black. One advantage of this method of dyeing blacks exists in the circumstance that only a weak mixture of aniline and oxidising agents is used, so that the disadvantages of aniline black—tendering the fibre, rubbing off, etc.—are considerably lessened, and at the same time a full shade is obtained. The following method is recommended, and is in use:—

1st operation.—The bath is prepared with 200 grms. diamine black RO, 100 grms. Turkey red oil, and 1,500 grms. Glauber's salt. Boil the material in this for two hours, wash cold, and wring.

2nd operation.—The cotton is immersed in the mordant described below, at 5° Be., in such a manner that it becomes thoroughly impregnated with it. Wring, and age the cotton for 10 or 12 hours in the ageing room at 30-35° C.

3rd operation.—Pass through a solution of 200 grms. potassium bichromate at 30° C. for three or four minutes, till the black is fully developed. The shade obtained depends on the temperature of the bath: at 30° C. a blue-black is obtained, and at 100° C. a jet-black. Wash well and wring.

4th operation.—Pass at 30-35° C. through a bath containing 200 grms. soap and 50 grms. Gallipoli oil for ten to fifteen minutes; wring wash and dry.

The mordant mentioned in the 2nd operation is made as follows:—

1. Two kilos. of chlorate of potash, and 2½ kilos. of salammonic are dissolved in water.

2. Into 5 to 10 litres of water pour 4'875 kilos. of hydrochloric acid of 21° Be., and 5'375 kilos. of aniline oil. Stir well until a complete mixture is obtained.

The two solutions 1 and 2 are well mixed, and are allowed to cool down, when a cold solution of 250 grms. of tartaric acid and a solution of 31 grms. of blue stone are added; by adding water the strength of the solution is brought to 5° Be.

This mordant may be kept in stock ready for use when wanted; care should be taken that after each using it be made up to 5° Be. by adding some stronger mordant. The chrome bath may be used three or four times; each time about 1 per cent. of bichromate of potash is added to make good what has been used. The soap bath can only be used once. The tartaric acid in the mordant has the remarkable property of making it stable, although in a cool place it will keep a sufficient length of time for all practical purposes. The black obtained is very fast to rubbing, washing, acids, and light.

A NEW BLEACHING PROCESS.

A new bleaching process has recently been patented in this country by two German chemists which appears to be notable as regards one or two points, but it has rather an unpractical look about it. To bleach calico or cotton cloth the fabric is first impregnated with about its own weight of acid solution, containing in the litre 10 grammes of sulphuric acid of 60 per cent. water to free acid, or there may be used 16 grms. of 30 per cent. hydrochloric acid, and ¼ gram. of "fluoracid"—this is a new bleaching agent. In this acid bath the cloth is allowed to steep for four hours, and is then steamed for about half-a-minute then it is washed and run through a ½ per cent. solution of soda at 50° C. In this it remains 12 hours or all night. If necessary the alkaline treatment can be repeated to ensure that all the grease is taken out of the cloth. After this alkaline bath the goods are washed, and to the wash waters is added 50 grms. of chloride of magnesium, or a similar alkaline earth compound. (This is one of the novelties of the process.) They are then ready for scalding or boiling, which is done in a keir for about 12 hours, with a solution of caustic soda containing resin. Subsequently the goods are chemised in the usual way, scoured, and finally washed. In the claims the process is described as consisting "in precipitating caustic alkaline earths on the fabric or material, then deoxydating it by heating in an air-pump, or reductive agent, and subsequently saturating it, boiling caustic alkaline liquors for the purpose of protecting the fibre through the caustic alkaline earths from structurally deforming action of the caustic lye and from oxidation."

RECIPES FOR DYERS.

The following are mostly translations from foreign sources. We do not guarantee the results from these recipes, but give them for the purpose of shewing our readers what their foreign competitors are doing:—

GREEN DRAB ON COTTON.

Prepare a dye-bath with
10 lb. cachou de laval,
7½ lb. sulphate of soda.

Heat the bath to about 140°F.; enter the cotton, and work for 20 minutes; lift, and enter into a bath of

½ lb. bichromate of potash.

Lift, rinse, and enter into a new bath of
5 oz. China blue,
¼ oz. sulphuric acid.

Dye for half-hour at about 140°F., lift, wash, and dry.

MOUSE BROWN ON COTTON.

Prepare a dye-bath with

15 lb. cachou de laval,
10 lb. sulphate of soda.

Heat the bath to 140° F.; enter the cotton, and work for 30 minutes; lift, and enter into a fixing bath containing

4 lb. bichromate of potash.

Work for 20 minutes, lift, rinse, and enter into a new bath containing

6 oz. Bismarck brown.

Dye at about 140° F. for 30 minutes, lift, wash, and dry.

DARK GREY ON COTTON.

For 100 lb. of cotton. Prepare a dye-bath with

10 lb. hyposulphite of soda,
3 lb. cinerine.

Enter the goods at 140° F., heat to boil, and work for one hour; lift, wash, and dry.

DARK FAWN BROWN ON HALF WOOL.

For 100 lb. of half-wool cloth. Prepare a dye-bath with

3 lb. soda,
20 lb. of Glauber's salts,
2½ lb. Hessian brown BE.

Enter the goods at 140° F., bring gradually to the boil, and work for one hour, then add

½ oz. sulphuric acid.

Work half-hour longer, wash, and dry.

ORANGE ON HALF WOOL FABRICS.

For 100 lb. of cloth. Prepare a dye-bath with

20 lb. Glauber's salts,
½ lb. bisulphate of soda,
5 lb. curcumeine S extra.

Enter the goods into the dye-bath at 140° F., heat gradually to the boil, and dye at that heat for one hour; lift, wash, and dry.

BROWN ON SILK.

For 10 lb. silk. Prepare a dye-bath containing

3 lb. salt,
6 oz. tolylene brown,
A little soda.

Enter the goods at about 140° F., heat to the boil, and work to shade; wash and dry.

PRINTING WITH TETRAZO COLOURS.

While many attempts have been made from time to time to print with the tetrazo colours—which, like congo, benzopurpurine, chrysamine, etc., are derived from benzidine—yet they have not come into any great use, because of their not being properly fixed on the fibre. Recently, however, it has been found that chrysamine, carbazol yellow, or other colours that, like them, are formed by the combination of a tetrazodiamine with salicylic acid, can be printed with a chrome mordant and give very fast colours, the chrome combining with the colouring matter to form a true colour lake, the formation of which on the printed fabric is one of the essential conditions of a fast colour. The process consists in taking eight parts of a neutral thickening, from five to 15 parts of a 10 per cent. paste of any of these salicylic acid colours, and about 10 to 20 parts of chromium acetate 20 degs. Tw. Make these into a printing colour, print, steam, and soap well to brighten up the colours. The explanation of the fact that the salicylic acid colours only can form this true colour lake lies in the peculiar chemical constitution of the salicylic acid, containing as it does both a hydroxyl and a carbonyl groups. In these colours one molecule of the diamine is combined with two molecules of salicylic acid or its homologues. It has been found that one of the molecules of salicylic acid may be replaced by a molecule of naphthol sulphonic acid.

This property can be taken advantage of in dyeing wool to obtain fast shades by first mordanting the wool with acetate of chrome and then dyeing with the colouring matter to be used, or after dyeing these colours in the usual way to pass the dyed goods through a bath of bichromate of potash, whereby the colours are rendered faster to scouring, etc.

New colouring matters produced from a sulpho acid of di-oxynaphthalene are the subject of a recent patent. The acid itself was patented a short time ago. By combining it with azotoluene a dye-stuff is obtained which dyes shades resembling those given by acid magenta, and which are clear and bright. With diazotised naphthylamine blue, violet dye-stuffs are obtained.

Mr. R. J. FRISWELL has patented a process for preparing oxy-azo toluidine, which forms the base of some colouring matters. The process consists in taking azoxytoluidine made from nitro-toluidine by reduction, and treating it with 10 times its weight of sulphuric acid for 72 hours. At the end of that time it is almost completely converted into oxyazo-toluidine, which is separated out by diluting with water, and can then be made into dye-stuffs in any convenient manner.

The following method of printing with the new jet black liquor of Messrs. Read Holliday and Sons will be found to give good results.—On wool. This, after scouring, is well washed, and treated with a chlorine bath in the following manner:—Eleven gallons of water, and 1 pint hydrochloric acid 34° Tw., to which is added for every 5 lb. of wool 1½ pints chloride of lime liquor at 10½° Tw. The pieces are passed through this bath, and left for one hour before washing thoroughly and drying. The black liquor is thickened with about its own volume of thickening, printed, steamed for 1 hour at 2 lb. pressure, washed, soaped, and dried.—Cotton does not require the preliminary treatment with chlorine. Very good blacks are obtained.

CINEREINE.—This is a colouring matter of the basic class, dyeing cotton mordanted with tannin and tartar emetic. It may also be dyed on unmordanted cotton if a little hyposulphite of soda be added to the dye-bath. It gives clear shades of blue grey. It can also be combined with *cachou de laval* by dyeing the last-named colouring matter first in the usual way and then with cinereine. The *cachou de laval* acts as a mordant for the cinereine, bluish black shades being thus obtained. It can also be used in combination with primuline; this is dyed first and the cinereine afterwards, the results being various shades of bronze or olive green, according to the relative proportion of the dye-stuffs used.

DYE-WOODS AND DYE-WOOD extracts are frequently treated with various chemical reagents for the purpose of increasing their colouring power. Generally the process is one of oxidation, and recently a French patent has been taken out in which the oxidising powers of the permanganates are taken advantage of. To the extract, which may be used of a strength of about 15 to 30° Be, is added a small quantity of a solution either of the sodium, or preferably, of the potassium permanganate, the proportions generally used being from 750 grms. to one kilo. of permanganate to 100 litres of extract at 30° Be. The mixture is heated to facilitate the combination of the solutions by making the mass more fluid. The great danger of all such processes for increasing the dyed power of dye-woods or their extracts lies in over oxidation, whereby the colouring power is practically destroyed.

ALIZARINE has been used hitherto in the form of a paste containing 20 per cent. of dry colour, because it has been found that the dry colour itself does not readily mix with water. A paste, however, is by no means the most convenient form in which to use dye-stuffs. Carl Romen has therefore taken out a patent for a process for using the dry colouring matter itself. To dye 100 kilos. of goods the colour bath must contain about 2,000 litres of water, 2 kilos. of dried 100 per cent. of powdered alizarine are dissolved in from 15 to 20 litres of warm water, to which 1,300 c.c.m. of soda lye of 38° B. and 300 grm. of borax are subsequently added. The solution is now added to the colour bath, before mixing therewith any other material which may be required, according to the properties of the water. After the whole mass has been well stirred, the alizarine is precipitated by the addition of 1,300 c.c. of hydro-

chloric acid at 30° Tw. The dyeing is done as usual. The principal advantage of the process is the saving of carriage, the freight of 80 per cent. of water being saved.

News in Brief.

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND AND WALES.

Bolton.

The threatened strike of spindle and fly makers at Messrs. Ryders' Works has been averted, concessions having been made by both sides.

It is not probable that the Bolton cotton operatives' Christmas holiday will be prolonged over Thursday; and in the following week the New Year vacation will be confined to Thursday and Friday. The state of trade is happily such as to discourage lengthened stoppages of mills.

On Saturday, Mr. Alderman Dobson (Messrs. Dobson and Earlow) opened a new art gallery and public library at Mere Hall, the gift of Mr. J. P. Thomasson, formerly member for the borough. The exhibition contains works by many eminent artists. Mr. Thomasson, who is in Rome, wrote that he had secured for the exhibition a statue by Rosetti—"A Vestal Tempted by Cupid." The exhibition will remain open until March.

Denbigh.

Mr. Williams, weaver, Henllan-street, Denbigh, having sent to the Queen a piece of cloth of his own manufacture, has received the following letter from the Dowager Lady Churchill, one of her Majesty's ladies-in-waiting:—"I found the petticoat on my arrival here. It is a very nice one, and I have given it to the Queen, who is much pleased with it. The Queen is much obliged to the weaver for having sent it to her, and likes it very much."

Dewsbury.

There was an interesting gathering at the Technical School on Saturday evening, the occasion being the annual presentation of prizes and certificates won by the pupils during the last session. The ceremony was performed by Miss Wainsley (daughter of the Mayor of Dewsbury). His Worship delivered a brief address, in which, in order to encourage the young people, he told of his own career as a student in the science classes when the school, now so large and so well appointed, was then the Mechanics' Institution. The President (Alderman T. B. Fox) said that the number of individual students was just over 600, with a class-list very much exceeding 1,000. On the previous Thursday the secretary, Mr. P. F. Lee, had gone through the books, and out of 598 individual students then registered no fewer than 118—or nearly a fifth of the whole—came from Batley, 27 from Soothill Nether, 12 Soothill Upper, 14 Mirfield, 35 Savile Town, 23 Thornhill and Thornhill Lees, 43 Ravensthorpe, 12 Heckmondwike, 4 each Osselt and Liversedge, 5 Birstall, 2 each Horbury and Drighlington, and 1 each Gomersal and Middlestown. The rest are Dewsbury students. The president expressed the pleasure of the Governors at seeing that the institution was serving so wide an area. In conclusion, he spoke of the high position the Technical School had taken in the textile department as well as in art and science.

Great Harwood.

On Monday night, the annual meeting of the Great Harwood Weavers' Association was held in the Weavers' Institute. There was a good attendance, Mr. Nicholas Bentley presiding. The report showed that the sum of £584 0s. 5d. had been gained during the year, making the total worth of the society £5,589 13s. 10½d. After the re-election of officers a member asked for information with regard to the new list. The chairman said he was glad to inform them that the universal list was dead and buried, and in all probability they would never hear of it again.

Hallifax.

On Saturday morning a fire broke out in the works of Messrs. John Sheard and Co., Atlas Carpet Works. It was discovered about six o'clock in a room over the boiler-house. Damage was done to the amount of about £200.

Heckmondwike.

The intensity of the frost has caused some damage and much inconvenience in various parts of the Spen Valley district, many mills and workshops being temporarily deprived of gas, whilst water mains have been frozen up in all directions. A break-

down in the engine at Orchard Dye-works (Messrs. M. S. Sharpe and Co.) is attributed to the frost, as are also several other minor casualties.

Heywood.

A paragraph that, perhaps unconsciously, appears to reflect somewhat upon the commercial wisdom of the directors of the Mutual Spinning Company of this town, has appeared in the *Oldham Chronicle*. In announcing last Saturday that the order for furnishing the Messrs. Dobson and Barlow, the eminent machine makers of Bolton, the *Chronicle* continued:—"It is said that price and rapidity of delivery have been important factors in deciding the matter, the directors being naturally desirous, in the first place, to have a complete concern at a low price per spindle, and, in the second place, to avoid the loss of production arising out of delayed delivery of the machinery." The suggestion of a "low" price, which would imply an inferior quality, is, of course, in connection with Messrs. Dobson and Barlow's machinery, altogether absurd. The capability of one firm, however, to deliver machinery a few weeks in advance of others is often, other things being equal, enough to turn the scale in its favour, but the suggestion that the directors of the Mutual were unduly influenced by such a trifle, considering that the building of the mill is only just being commenced, is as incorrect as another statement in the same paragraph—that the order for the scutching machinery had also been awarded, when, as a matter of fact, it has not even yet been given. The paragraph in question is as wide of the mark in these reflections upon the directors of the Mutual as it is also in the implied suggestion that they were not satisfied with their experience of the machinery supplied to their old mill by the eminent firms who had furnished it. Considering the very high position each of them occupy in the textile machine-making world, the imputation is on a par with the remainder of the paragraph in its absurdity.

Keighley.

The cloth weavers employed by Mr. Robert Clough, Grove Mills, Ingrow, numbering about 70, have come out on strike. They allege that the masters have increased the standard length of pieces without any increase of pay. Two deputations have waited upon Mr. H. S. Clough, who states that the firm are already paying more than other firms, and that when the new system has taken effect the weavers will still be in a favourable position as compared with other weavers in the district.

Lancaster.

Early on Tuesday morning a fire broke out at Messrs. Williamson and Sons' Lunc Works, which burned fiercely for several hours. The conflagration commenced in the top portion of a three-storied building used for making lineoleum. The town fire brigade and the firm's brigade were summoned and worked vigorously. The lower part of the building, containing finished goods, was saved, though the top storey and the roof were destroyed. The damage is extensive. The fire lasted for about nine hours.

Leeds.

The annual distribution of cotton, known as the St. Thomas's Cotton Dole, took place in the National Schools, Bramley, on Saturday. Under the provisions of an old bequest, all householders in the township paying not more than 3s. 6d. per week rent are entitled to participate in the distribution, and on Saturday close upon 1,400 lengths of cotton were thus given away between half-past two o'clock and four in the afternoon, there being a continuous stream of applicants.

Manchester.

On Monday night fire was observed on the premises of Mr. Frederick Ewen's warehouse in Piccadilly. It originated in a back room on the third floor, and has done considerable damage to that particular part of the premises and contents. There was a fire at the same building early in November.

A meeting of the Committee of the North and North-east Lancashire Spinners and Manufacturers' Association was held on Tuesday at the Mitre Hotel, in this city. A deputation from the various Spinners and Minders' Associations in the district, accompanied by Mr. Mawdsley, of Manchester, the general secretary, attended, and applied for 5 per cent. advance, to be paid on the second pay-day in January. The employers granted the application, and the operatives will next week commence working at the advance.

On Tuesday a deputation from the card and blowing-room hands of North and North-east Lancashire waited upon the Central Committee of the employers for that district at the Mitre Hotel. The delegates were accompanied by Mr. Mullins, of Oldham, the general secretary. The deputation asked for an

advance of 10 per cent. for dotal employees and 5 per cent. for others in their branches. The employers, after hearing the case of the operatives, agreed to give an advance of 5 per cent. to drawers, slubbers, intermediate minders, and creelers, and 10 per cent. to strippers and grinders and blowing-room hands; the advance to take effect on the second pay-day in January, so that the operatives will commence working on the advance next week.

SCOTLAND.

Paisley.

On Thursday of last week, about 9 o'clock, fire broke out in the dye-works at Ferguallie, recently erected by Messrs. J. and P. Coats in connection with their extensive thread factory there. The outbreak is supposed to have originated in the dynamo room, which lights the building by electricity, and which is situated in the western wing of the building. As it adjoins the repairing department in which the yarn is sorted before undergoing the process of dyeing, a large quantity of that material became ignited, with the result that the flames spread with great rapidity. The brigade attached to the mills was promptly on the spot, and the burgh fire brigade was in readiness, but was not called for some time, the local men managing to check the progress of the fire and confine it to the above-mentioned portion of the premises. In about two hours it was practically extinguished. A quantity of yarn and some machinery were damaged.

Pollokshaws.

Sheriff-Principal Cheyne has issued his judgment in the appeal against the decision of Sheriff Cowan in the action at the instance of James Ward, thirteen years of age, residing at 21, Heriot-street, Pollokshaws, against the Eastwood Beesting Co., bleachers, dyers, and finishers, Cogan-street, Pollokshaws, and Peter Forbes, the only known partner thereof, in which pursuer claimed £200 as damages for injuries caused to pursuer's hand by it being drawn between two mangle rollers while he was smoothing a piece of cloth to be passed through the rollers. Sheriff Cowan awarded £50 damages and expenses. Sheriff Cheyne sustained the appeal, and assizes the defender, finding no expenses due to either party.

IRELAND.

Belfast.

A fire broke out on Monday morning at Kennedy's Mill, but it was speedily subdued by the energy of the employes. It originated in the hacking store.

Miscellaneous.

THE INDIAN FACTORY COMMISSION'S REPORT.

The following is the report of the Indian Factory Commission:—

To C. J. Lyall, Esq., C.I.E., Secretary to the Government of India, Home Department.

Calcutta, November 12th, 1890.

SIR,—In accordance with the instructions contained in Resolution No. 10 Judl. 1384-1394, dated Simla, 25th September, 1890, we, the undersigned Commissioners appointed by His Excellency the Governor-General in Council, having completed our enquiry, beg to report as follows:—

1. The Commission began its work in Bombay on the 4th October, and has since visited Ahmedabad, Cawnpore, and Calcutta. It has held 28 meetings, visited 34 factories, and examined 96 operatives. In the following pages will be found the proceedings of each meeting, and the evidence in detail of each witness examined at those meetings. In the appendix we give a list of the factories visited. From this list it will be seen that we have endeavoured to obtain our information from as many different kinds of factories as possible. We desire to offer our thanks to the owners and managers of the factories visited for the great and cordial assistance we have received from them in our enquiry.

2. The proceedings show the system we have adopted in selecting and examining those operatives who have given evidence before us. The first 12 witnesses were produced by Mr. Narayan Meghaji Lokhandy, the chairman of the Bombay Mill-hands' Association. The next five witnesses were brought before us by Mr. Sadashoo P. Kelkar, a missionary of the Prarthana Samaj, who takes an interest in the welfare of the Bombay operatives. The first seven witnesses examined in Calcutta were selected

by Baboo Russick Lal Ghose, the representative for Bengal. Mr. Framjee Manekjee, the representative for the North-West Provinces, selected the first three witnesses examined on the 24th October at Cawnpore. The remaining 69 witnesses were selected by ourselves on our visits to the different factories from among the workmen actually employed at the time of our visit. Each witness was examined on the spot in his own language, and the answers recorded in detail by the President himself. Referring to the resolution at our first meeting regarding the amount of publicity which should be given to our proceedings, we are glad that Government approved of our suggestion to exclude the public while the operatives were being examined. Our subsequent experience has proved that this was a necessary precaution. Operatives who had been answering our questions freely while alone were in many instances reduced to silence or to evasive replies by the accidental presence of their employers. On the other hand the public have had free access to the evidence recorded, and the newspapers have been able to publish in detail all the answers given by each operative. We are satisfied that, as regards the large majority of the operatives examined, the evidence recorded is the *bona fide* opinion of the operatives themselves, and that, with the precautions taken, it was impossible that they could in any way have been influenced or tutored by others.

3. Sets of questions suitable for men, women, and children were drawn up with the advice of the representatives specially appointed to assist us. Those of the public who are interested in factory legislation were also invited by notices in the newspapers to favour the Commission with any suggestions they may wish to make. As a result, the questions given at page 19 were adopted for our enquiry. It requires a special knowledge of this subject and its literature fully to appreciate the significance of some of the questions which at first sight do not appear relevant. There are other questions which have obviously no reference to the special points on which we have been called upon to report. But as the representatives of the mill-hands on our Commission urgently desired that these questions should be asked, we considered it advisable not to place any restrictions on their wishes in this respect, so long as such action did not interfere with the proper discharge of the duty which His Excellency in Council has imposed upon us.

4. Taking into consideration the class of the witnesses examined, their general ignorance, and, in many cases, unintentional want of accuracy, together with the fact that most of them were unaware of the questions that were to be asked, and had not given them any previous thought, we are of opinion that it would serve no useful purpose to make an elaborate analysis of the evidence here recorded, or to refer to the statement of any one witness or set of witnesses to establish any particular point under consideration. We would rather in this report give the general conclusions at which we have arrived from the examination of the witnesses, from a study of the answers which have been recorded, and from what we have personally observed in our visits to the factories.

5. We hope to be as brief as possible in our consideration of the points which have been referred to us for enquiry. While our main object will be to furnish direct answers to the questions which have been asked in the Resolution and to give briefly our reasons for those answers, we desire, with the permission of His Excellency in Council, to add at the end of our report a few suggestions which bear upon subjects so intimately connected with the well-being of Indian operatives, that it would, in our opinion, be a mistake not to take advantage of this opportunity to bring them prominently to the favourable notice of their employers.

6. LIMITATION OF HOURS OF WORK FOR WOMEN.—To the question—"Is the limitation of the hours of work for women to eleven in any one day proper and sufficient in view of the conditions under which factory labour is performed in India?"—we would answer that it is proper and sufficient. Our enquiry has shown that female labour is only utilised to any appreciable extent in factories working with jute, cotton, and wool. In regard to the jute industry we find that a larger proportion of women is employed with moving machinery than in either of the other two industries. We also find that they only work in shifts, and that the total number of hours of work in their case is usually nine and never exceeds ten. In regard to the cotton industry we may say, roughly speaking, that about 80 per cent. of the female operatives are employed on handreeling, which is in no way connected with the machinery worked by motive power. In regard to these operatives, we give it as our opinion that they, as a rule, work less than 11 hours, and that they as piece-workers can, and do, take such intervals of rest during working hours as they like for necessary

purposes. With regard to the remaining 20 per cent. of the female operatives who work with moving machinery in the cotton industry, we find that, with hardly any exception, they are in Bombay employed as winders, while in Ahmedabad, Cawnpore, and Calcutta they are employed in all departments, except weaving. Leaving the Calcutta cotton operatives out of the question, because they work in shifts, and for only nine or ten hours, we pass on to consider this question in its relation to women who work in the other provinces.

8. RESULT OF THE LIMITATION OF HOURS OF WORK IN THE CASE OF CERTAIN FEMALE OPERATIVES.—If the hours of labour are limited to 11 for women working with moving machinery, we are convinced that, without any exception, these operatives will be replaced by male adult operatives or half-time children. The law, supposed to be passed for their benefit, will inflict serious permanent injury on these skilled mill-hands, and deprive them of a chance of earning a living in these factories. Our reasons for arriving at this conclusion may be stated as follows:—

(1) Since the mills work from daylight to dusk, it has in practice been found impossible, except where the shift system is adopted, to employ operatives who cannot work all the time the machinery is moving. As an example, we may draw attention to what has been the result of the provision of nine hours' work for children in Act XV. of 1881. All children under 12 have been dispensed with; or the law is evaded, and children under 12 are, to their great injury, employed as full-timers—working 12 hours or more. In Ahmedabad it has been found possible to employ a few under-age children as half-timers, and so comply with the law. But there are no children working for nine hours, except under the shift-system.

(2) The difference in the wages between male and female operatives is, in most places, so small that the millowner will not hesitate to substitute male adult labour, on which no restrictions are laid, for female labour which could, under the proposed amendment of the law, be worked only for 11 hours. Our enquiry has further shown that there will be no difficulty whatever in getting as many men as may be required. We know that arrangements have already been made at Ahmedabad to take action in this direction as soon as the new law has been passed.

9. PROPOSED EXCEPTION TO THE LIMIT OF 11 HOURS' WORK FOR WOMEN.—Knowing the serious effect the proposed legislation would have on these women, we took the trouble to examine carefully into the details of this question at Ahmedabad, where the largest proportion of these operatives is employed in the spinning department. We found, in the first place, that whereas in Bombay one male operative could attend a roving, intermediate, or slubbing machine, in Ahmedabad each machine had a woman and a boy or a man to look after it. The work was not, therefore, so continuous as in Bombay, and certainly not as hard as it is for females in England. With two operatives working on one machine, it is nearly always possible for each of them to take frequent spells of rest. To tell a thousand poor women that they cannot be allowed to work in this manner for 12, 13, or even 14 hours, and that they must in consequence give up their work, will, we feel sure, not commend itself to the judgment of the public. Since, for other reasons, it is in our opinion absolutely necessary to legislate in this matter for the protection of women, we consider that women who are now working with moving machinery should, if they desired it, be individually exempted from the provisions of the section requiring a limit of 11 hours of work. It might also be provided that the Local Government shall have power to cancel such exemption at any time. We are supported in our recommendation that some exception should be made in regard to these cases, by the report of the discussion which took place at the Berlin International Conference on this subject, and which resulted in Rule 3 of the Regulations concerning female labour being adopted. The rule and the exception, as they were adopted, run as follows:—(2) "That their actual work should not exceed 11 hours a day, and that it should be broken by rests of a total duration of one and a half hours at least." (3) "That exception be allowed for certain industries." In moving the adoption of this exception, the Italian delegate at the Conference remarked: "Consequently, if the restrictions proposed for limiting the employment of women in different industries are too absolute, a result will be reached entirely opposed to that which is desired, and, instead of bettering the condition of numerous classes, a very serious sacrifice will be imposed on them." This exception was finally carried at the Berlin Conference by a majority of 13 votes against Switzerland, Portugal abstaining. With this prac-

tically unanimous opinion of Europe before it, the Government of India, in legislating for the first time for the protection of women, would in our opinion be justified in not making the proposed restriction too absolute. We regret that our colleague, Mr. Bengallee, who was not present at the Ahmedabad meetings when this subject was enquired into, does not agree with us in this conclusion. His views on the subject will be found in a separate minute.

10. THE OPINIONS EXPRESSED BY FEMALE OPERATIVES ON THE QUESTION.—To the question,—“Do the female operatives desire that the day's work should be limited to this amount, and, if not, to what amount?”—we would answer that we have not found any desire on the part of female operatives to have their present hours of work shortened. On the contrary, they have often expressed themselves strongly against any interference which will subject them to the risk of being turned out and deprived of the means of earning their livelihood. In Ahmedabad and Cawnpore, where the wages of all labourers as well as factory operatives are low, many of the very poorest classes of women will be in danger of starvation if measures are not taken to protect them from the operation of a law which limits their hours of work.

11. DISTINCTION BETWEEN YOUNG PERSONS AND ADULTS.—To the question,—“Should the law draw a distinction between young persons and adults, and if so, the age of a young child being fixed at from 9 to 12, what should be the definition of a young person, and what should be the hours of employment of this class?”—we would reply that if the maximum age of a child is fixed at 12 years, some protection should be extended to young persons between the ages of 12 and 14. If, however, young persons are recognised as a separate class of protected persons, and their hours limited to, say, ten, this class will, as far as the factories which do not work on the shift system are concerned, cease to exist, just as children under 12 disappeared on the passing of the Factory Act of 1881 from some of these factories, and nine-hour workers have ceased to exist in others. What will happen will be that children and young persons of 11, 12, and 13 years of age will either be passed as over 14 and worked as adults, or the ten hours of work for young persons will, on some pretext or another, be extended to the full time for which the machine is running. It has, we think, been proved to demonstration that no person will be entertained in the Bombay, Ahmedabad, or Cawnpore factories in which motive power is used, whose hours of labour are restricted by law to any period, between full-time and half-time work. With this undoubted fact before us, we have to consider whether it would not be safer to class the young person as a child, and let him work the hours we propose, in answer to the next question, than to let him run the risk of being worked full time with the adult male operatives. Having given the subject our anxious consideration, we prefer to recommend that there should in this country be no separate class recognised by law as young persons, and that this difficulty should be met by raising the maximum age of children to 14. Our reasons for arriving at this conclusion may be stated as follows:—

(1) We have satisfied ourselves that 12, the present maximum limit of age for children, is too low, it being impossible to guess with accuracy the age of any child who may be over 10 and under 13. The result of the present law has been that hundreds of children between the ages of 9 and 12 are now daily employed in India as full-timers doing 12, 13, and 14 hours' work, to the great detriment of their health. We may add that the only test now applied to ascertain a child's age is the counting of his teeth. From what we have seen of the application of this test and the results that have followed it, we unhesitatingly say that, as a practical test, it has been proved to be a failure.

(2) If the limit of age is fixed at 14 for boys and girls, the extreme danger of having very young children doing full-time work will be avoided, and a medical officer will be able with very fair accuracy to decide whether a boy or a girl is 14 or not. The signs of approaching adolescence and puberty in boys and girls of this country at and after the age of 14 are too obvious to be overlooked by any professional adviser.

(3) The Bombay Factory Commission of 1884, in which the mill-owning interests were fully represented, recommended that the age should be raised to 14.

(4) The medical committee of five experienced medical officers of Bombay, especially appointed in connection with the Factory Commission of 1884, also recommended that the age should be raised to 14.

(5) The Bombay Government, in reviewing the

report of the Commission of 1884, approved of these recommendations.

(6) We have said that in our opinion it is not necessary to place any person over 14 under restrictions as to the hours of labour. Our reasons for this opinion are derived from our intimate knowledge of the Indian operatives, their social customs, and their pecuniary requirements. Unlike young persons in Europe, Indian boys and girls of 14 are, in the majority of instances, either married or about to be married, and begin to assume the responsibilities of family-life. Then, again, a tropical climate and the diseases common to it often age the parents so rapidly, and throw them out of work, that a son or daughter, aged 15 or 16, is frequently found to be the mainstay of the family; and lastly, the influences, customs, and requirements of what is known as the joint-family system often oblige young persons to become bread-winners at an early age. If the hours of work for young persons are restricted, we have shown that they will be either deprived altogether of their means of livelihood, or compelled to work as half-timers earning half-pay. We cannot imagine that either of these results can be desired by anyone who has the welfare of the Indian operative at heart. In our opinion, boys and girls of 14 are physically well able to do full-time work of the kind required of them in factories. No comparison of any value can be made between young persons of similar ages in England and in India, nor can the work done by them in the two countries be compared, because it is allowed by experts, and has been proved conclusively in the evidence taken by the Commission of 1884, that the work done by the mill-hands in England is more severe than that done in India.

12. LIMITATION OF THE HOURS OF WORK FOR CHILDREN.—In reply to the question,—“Is the limitation of the hours of work for children to nine in any one day proper and sufficient in view of the nature of the work on which children are employed in Indian factories, and the conditions under which they have to perform that work?”—we would answer that, in the first place, nine hours' work, except under the shift-system, is too long for Indian children, and in the next place that, except where the shift-system prevails, it has never been given a trial since the law was passed. Nor is it a suitable limit to fix, except when the children work in shifts. In support of our first contention, we would quote the conclusion arrived at by the representatives of the Powers of Europe at Berlin, where it was decided that the actual work of children below 14 should not exceed six hours a day. In case, however, it might be so that the conditions in India and Europe are so different that the Berlin Conference conclusion cannot be accepted as final for Indian factories, we give the opinion of a few Indian experts on this subject:—

(1) Mr. J. Jones, speaking as an Inspector of Factories for 13½ years in England and one year in the same position in India, says:—“There is, in my opinion, only one way out of the difficulty, and that is by employing two sets of children, i.e., for six hours each (vide page 37 of the Commission Report, 1884).”

(2) Mr. K. N. Saerai, Acting Inspector of Factories for the City of Bombay, says:—“I should propose to employ two sets of children, one from morning to noon, and the second from noon till evening” (vide page 44 of the same Report).

(3) Mr. S. Parkington, weaving master, approves of working children as half-timers (see page 91 of the same Report).

(4) Mr. Becharadas Ambaidas, C.S.I., mill proprietor, says:—“I think nine hours too long. In my own mill I have two separate batches.”

(5) Mr. Bunchorelal Chotalal, C.I.E., the founder of the cotton industry in Ahmedabad, and a large mill proprietor, informed our President that half-time work was the only solution of this question.

(6) Mr. Whittaker, manager of Jeroraj Baloo Mill of Bombay, volunteered to the Commission the information that he was of opinion children should only be worked six hours.

Our second contention is that, except where the shift-system is in force, that is to say, in Bengal, the limit of time fixed—nine hours—has been found unsuitable and impracticable by millowners, and they have simply been unable to adopt this limit under any circumstances. In proof of this statement we can refer to all the answers on this subject before the Factory Commission of 1884, and to the fact that there is not now a single factory that we are aware of in Bombay, Ahmedabad, and Cawnpore, which has made any serious attempt to employ children for nine hours.

13. OUTSIDE THE SHIFT-SYSTEM, HALF-TIME WORK THE ONLY SOLUTION.—In the Calcutta jute mills, where the children, as a rule, work nine hours in shifts, and for only four days in the week, we cannot say that they are in any way overworked by doing only 36 hours' work in the week. We would

go further than this, and say that the nine-hour shift-system, even if it entailed 54 hours' work a week, would not be too severe for children. Any change in this system in Calcutta will undoubtedly lead to a reduction of the wages earned by children; and these wages, it should be remembered, are already very seriously affected by the Jute Mill Association rules, under which mills work only four days in the week. It is a fact, however, that none of the experts of Bombay, Ahmedabad, and Cawnpore have ever proposed to adopt this system in the mills working in those cities. At Ahmedabad we found that an attempt had been made to work children as half-timers. This attempt would have been more successful if it had not been for the regulations drawn up by the Bombay Government under section 7 of the Act, which required that children should not be worked more than 4½ hours without an interval of rest. To comply with this regulation, the millowners devised the present system of working the children eight hours on one day and four hours on the next, thus giving them an average of six hours a day. We give it as our deliberate opinion that in those mills which do not work on the Bengal shift-system, the half-time system will be found the only solution of all the difficulties which surround this question. The authorities above quoted are of this opinion. In fixing the hours of work for children, the greatest care must be taken to see that nothing is done which will make it impossible for the factory-owners in this country to make full use of the labour of children. Having this point prominently in view, we suggest that since it is the rule for nearly all Indian factories to work from daylight to dusk, that is, taking the extreme limits in summer of 5 a.m. to 7 p.m., or 14 hours with half an hour's interval, the extreme half-time work of a child must be fixed at 6½ hours. As a rule, however, it will not on the average exceed six hours. We shall avoid all chance of causing inconvenience if we recommend seven hours as the extreme limit within which children should be employed. If the proviso that no child shall be allowed to work by artificial light is adopted, and the rule requiring a compulsory stoppage of work at midday is added, it will make it impossible for factories to employ a child in any one day for more than 6½ hours, or all the year round for an average of about six hours.

14. INTERVAL OF REST FOR CHILDREN.—The present law, which places the limit of nine hours' work for children, requires an hour's interval for rest. Our unanimous and well-considered opinion is that, if children are worked as half-timers in the manner above recommended, no fixed interval of rest for them should be required by law. Our reasons for this opinion may be stated as follows:—

- (1) To give an interval of rest to children while the machinery is moving, and while the other operatives are at work, would be so great an inconvenience to millowners, that they would certainly try to dispense with children, or the law would be evaded. We have already said that all efforts should be directed to finding employment for children and making it convenient for mills to employ them.
- (2) Our enquiry has proved beyond all doubt that it is the practice for Indian operatives of all classes to go out of the factory at odd times for smoking, drinking water, and other purposes, and to stay away from five to 15 minutes. This casual taking of intervals of rest is facilitated in India by having more hands than are employed in Europe; and a reference to the answers furnished to question 29 will show that the nearest workman, or *jorivalah* as he is called, is always ready to carry on the absentee's duties. Given these opportunities of relaxation, and given the nature of the work children are employed on in Indian factories, we think that an interval of rest within the six hours of work is unnecessary.

15. OBJECTIONS RAISED TO HALF-TIME WORK FOR CHILDREN.—In the evidence taken before the Commission of 1884, many witnesses gave it as their opinion that if children were employed as half-timers, there would be some danger of the same child working in the forenoon in one factory and in the afternoon in another. In our opinion this danger has been exaggerated. If a half-time law for children was passed, and the guardian as well as the employer was made responsible for seeing that it was not broken, we are confident that for every hundred cases in which the law is now evaded, there would not be more than one case of a child found working in two factories on the same day. In this connection we should remember the opinion expressed by the Commission of 1884: "We may, however, conscientiously say that we fear many children are worked full time." We also notice that much stress has been laid on the fact that there being no compulsory education in this country, children employed as half-timers would run wild and get into bad company. To this argu-

ment we reply that there is little doubt that when the scheme of half-time work is adopted, Local Governments will, with the help of millowners, devise some means for educating the children and keeping them under control in schools. Supposing that no steps were taken in this direction, which is most improbable, we would say, let the children do what millions of unemployed children do in this country, what the half-timers of Ahmedabad do apparently without any injury—amuse themselves as they please. We think that public opinion would be in favour of this alternative, and would be opposed to the employment of children of tender years, on any factitious grounds, in factories for 12 and 13 hours a day, as they are liable to be now. We would here like to say that if our recommendations are approved, the convenience of millowners in regard to the introduction of changes in the organisation of their labour in factories must be consulted, and the law brought into force after sufficient time has been allowed for reorganisation.

16. HOLIDAYS FOR WOMEN AND CHILDREN.—To the enquiry contained in the first part of the fourth question—"Does clause 5 of the Bill, now before the Legislative Council, sufficiently provide for holidays for women and children?"—we would reply that this clause does not, in our opinion, provide what is really wanted—namely, one day's rest in seven. Under the proposed clause, women and children would get 48 holidays in the year. We recommend that the proposed law should fix one day's rest out of seven days, or 52 holidays in the year. This is practically what is now given voluntarily in most of the factories outside the Bombay Presidency.

17. HOLIDAYS FOR ADULT MALE OPERATIVES.—To the second part of the fourth question—"And is any provision required prescribing an allowance of holidays for adult male operatives?"—we would answer that, subject to the exceptions recommended in paragraph 18 of our report, provision should be made in the Act for securing to male adult operatives the same holidays as have been recommended above for women and children. Our reasons for making this recommendation are:—

- (1) That, if there is one point on which Indian operatives are practically unanimous, it is in demanding that this concession shall be granted to them.

- (2) That it is a fact that a weekly holiday is now given in a large proportion of the factories in India, while the remaining factories give at least two holidays in the month.

- (3) That the Factory Commission of 1875 made a modified recommendation to this effect, and two members of the Commission of 1884 wrote a separate note advocating the weekly holiday, and shewing that if there was unanimity or nearly so on any one point in that enquiry it was that one day's rest in seven should be allowed to all mill-hands, male and female.

- (4) That the Committee of medical experts appointed by the Government of Bombay to enquire into the health and condition of the mill operatives in the city of Bombay, reported "that further, in the interest of the general health of the operatives, it should be compulsory to allow certain periods of rest in the day and a certain fixed number of holidays (say, four) per month."

- (5) In conclusion, we may say that the Millowners' Association agree to accept the rule that there shall be a weekly holiday (*vide* copy of a letter given by Mr. Lokhanday in the Appendix).

18. EXCEPTIONS TO BE MADE FOR CERTAIN FACTORIES.—It will be necessary to provide for exceptions to any general law granting a day of rest in respect to work which, for technical reasons, necessitates continuous production, or which supplies the public with articles of necessity that must be made from day to day. Exceptions must also be made for work which by its nature cannot be carried on except at stated seasons or times dependent on the irregular action of natural forces.

19. THE DAY OF REST SHOULD BE SUNDAY.—If one day of rest in seven is granted, the operatives in all the provinces visited by us desire that it shall be one fixed day in the week, that all the factories shall be closed on the same day, and that the law shall fix Sunday as the day of rest. We observe that in the Bill before the Legislative Council, no mention is made of Sunday, and we suppose that a reference to a Sunday holiday was omitted in consideration of the fact that the intentions of the British Government might be mistaken in appointing the Christian Sabbath as the day of rest. After a careful enquiry on this point from all the operatives we have examined, we have come to the conclusion that they ask that Sunday should be the day fixed for the holiday, because it is the most convenient day for meeting their friends who are employed in other mercantile establishments and Government offices, where a Sunday holiday has always been the rule. As a fact, the holidays now given to them are given on Sundays. Speaking for

ourselves as members of the principal religious communities of this country, we give it as our opinion that there is no possibility of the motives of the Government being misunderstood if it should choose to select Sunday as the lawful day of rest. There is no question here of preference on religious grounds. Ever since the British Government has been established in India, the people of this country have been accustomed to consider Sunday as the most convenient day of rest. No other day could now be selected which would not cause the greatest inconvenience to all concerned.

20. INDIAN FESTIVAL HOLIDAYS.—In regard to the Indian festivals, which are kept as holidays in factories, we recommend that the occupier of a factory should, if he desires it, be allowed by law to work his factory on the Sunday following a festival holiday. We do not think, however, that when two festival holidays are given in one week, the two following Sundays should be working days. There are, we believe, only two or three festivals in the year on which more than one day's holiday is given. In advocating, therefore, that the holidays in one week should only affect the Sunday following, we are not likely to cause any serious loss to the owners of factories.

21. SUNDAY A COMPLETE DAY OF REST.—During our enquiries we have found that in a large number of factories, especially those connected with the cotton industry, it is usual to require the operatives to attend the mill on holidays for the purpose of cleaning the machinery. The mill-hands are ordinarily employed on these occasions from early morning until 10 or 11 a.m., and this without any remuneration. This the operatives consider a hardship. There is no doubt that, although the work is light, the mere fact of having to attend at the factory takes away from them the enjoyment of the day of rest, and prevents the operative from spending his holiday in taking change of air and visiting his friends and relatives. If it is granted that one day of rest in seven is necessary, it should in our opinion, be a complete holiday. To make it a complete holiday, legislation is necessary, as proprietors are not likely to act on general recommendations on this subject.

It is not for us to suggest when the cleaning of machinery, which is now done on Sundays, should be undertaken; but we may mention that in those factories which now give a complete day of rest on Sundays, the machinery is stopped on Saturday afternoon for cleaning. In Bombay, where the mills will be chiefly affected by any legislation on the point, it is the practice to clean the machinery only twice a month. Supposing that it takes two or even three hours to clean machinery, the loss of time and work that would be entailed would be four to six hours in a month. It may be possible to make up this time during the month; but if it is not possible to do this, it does not seem to us a loss so serious as to prejudice the passing of a measure which is of such great importance to the comfort and well-being of the mill-hands. An exception will have to be made in regard to the employment of artificers who are on Sundays engaged in overhauling the machinery and undertaking repairs.

22. A GENERAL WORKING DAY FOR ADULT MALES NOT REQUIRED.—In regard to the question—"Do the male operatives desire that a general working day shall be fixed by law?"—we would reply that, taking the evidence obtained by us as a whole, the operatives desire that the present working day—daylight to dusk—should be continued. Some intelligent mill-hands have, no doubt, expressed a wish to have fixed hours; but others—and these are the poorer operatives—object very decidedly to any alteration in the present arrangement which is likely to reduce their wages.

23. GENERAL WORKING DAY NOT DEMANDED NOR ADVISABLE.—To the enquiry—"If this change is not desired by the operatives themselves, do the conditions under which they work demand that it should be adopted?"—we give it as our opinion that there is nothing in the conditions under which Indian operatives work which calls for any legislative restrictions as to the hours an adult male may choose to work. Nor can we conceive any conditions which can ever call for State interference in this matter. The operatives of India are at present too ignorant to appreciate the full significance of this step which threatens to deprive them of what has always been considered the inalienable right of every man to do what he may please with his time, and which has hitherto left him to be the best judge of what is necessary for his health and requirements. If the Indian operative is too ignorant to appreciate the great issues involved in this question, his English fellow-workman is not. The mill-hands who work in similar textile manufactures in England have declared in a very emphatic manner that they will have no interference in the hours they choose to work, and, rather than submit to any restrictions

on this subject, will sever their connection with the other labour unions which are now advocating the eight hours' movement. Taking all these reasons into consideration, the Government would not, in our opinion, be justified in legislating in this matter.

24. BOMBAY MILL-HANDS' REQUEST FOR FIXED HOURS.—We should mention that we have discussed with the President of the Mill-Hands' Association the request made in the petition of the mill-hands of Bombay (*vide* Appendix) that the mills should commence work at 6.30 and cease at sunset. We were informed that the main reason for this request was the hardship experienced by the operatives in not knowing when a factory was about to start work. The use of the steam whistle being prohibited by the Municipality, and there being no public clocks in the quarter of the town occupied by operatives, they are unable to tell the time, or to guess how long it is from daylight. In this uncertainty, and to avoid being late, they often find themselves arriving at the mill long before it begins work. Those operatives who are too early may, we are informed, be found lying about the approaches to the mill sleeping. It was to avoid this serious disturbance of rest that the mill-hands and their advisers thought Government should legislate for a fixed hour of beginning work. We have already said that we have come to the conclusion that the operatives as a body are satisfied with the present hours of work—daylight to dusk—but in our opinion steps should be taken to find a solution for the difficulty above referred to, as it is undoubtedly a serious evil that operatives who work such long hours should not enjoy every moment of sleep and rest that they can get. In the concluding part of our report we offer a suggestion for obviating this difficulty which we commend to the favourable notice of the Bombay Millowners' Association.

25. COMPULSORY STOPPAGE OF WORK FOR A MIDDAY RECESS.—The next point on which we were required to make an enquiry is stated in clause (c) as follows:—"Do the male operatives desire that there should be a compulsory stoppage of work at a fixed time of the day, and, if so, of what length, and should there be an exception in the case of men who work by shifts or sets?"—We answer this question in the affirmative, and say that the male operatives do desire legislation on this point, and that the majority would be content with a recess of half-an-hour if they could get a full half-hour.

The evidence taken by us shows that nearly every factory, which does not work by shifts or sets, stops its machinery for a certain time at about midday for periods varying from 15 minutes to one hour. Some factories give a whole hour's recess. Most of the Bombay mills profess to give half an hour in their rules; but in many cases, either from selfish motives or for the purpose of getting the operatives up to their work in time, the gong or whistle for recommencing work is sounded ten or 15 minutes before the full half-hour has expired. The half hour's recess allowed by the rules thus becomes one of 15 or 20 minutes only. The operatives naturally feel aggrieved at this, and they ask in their petition (*vide* Appendix) that Government should interfere and fix a recess of half an hour by law. In our opinion the request is a reasonable one, which will not injuriously affect millowners. We, therefore, recommend that between the hours of 12 and 1 p.m. every factory not working on the shift-system and not obliged, for technical reasons, to work continuously, should be required to stop its machinery for full thirty minutes. It should further be provided that it shall not be lawful to recall the operatives to work by sounding a whistle or gong, or by any other means, before that period has actually expired, nor should the recess be allowed to be curtailed by any system entailing a delay in their passing in and out of the factory. While no interference in regard to mills working from daylight to dusk on the shift-system would appear to be necessary, we find that many of these mills are adopting artificial light by which the work of the last shift, which should run from 12 to 6 p.m., is prolonged often up to 8 or 9 p.m. In these cases, as a fact, some interval is given; but it may be necessary, perhaps, once for all, to lay down that no operative shall work for seven hours continuously without a recess of half an hour. Such a general regulation ought to be sufficient to control those factories which may at any future time try to take advantage of their operatives in this matter.

26. FREQUENT INTERVALS OF REST USUALLY TAKEN BY OPERATIVES DURING WORKING HOURS.—Some remarks are necessary in regard to the latter portion of the last question. "If the change is not desired by the operatives themselves, do the conditions under which they work demand that there should be a compulsory stoppage of labour, and, if so, in what manner should it be provided for?" We have already stated that the operatives

desire that there shall be a compulsory stoppage. It may be worth while here to refer again to the opinion expressed by the Bombay Medical Committee, and given above in paragraph 17, where they recommend that it should be made compulsory to allow certain periods of rest during the day. Our enquiry has shown that beyond the half-hour in the middle of the day no other compulsory time for rest is required, because the operatives in all the provinces visited by us are, without exception, in the habit of going out at odd times for five or ten minutes for all sorts of purposes. We have ourselves seen them engaged in drinking water, washing, smoking, and looking about. Millowners of most mills are liberal in regard to this point, and in many instances employ extra hands to relieve the workmen who want to go out on these occasions. In addition to this, the *jorisalla*, or fellow worker, can always be relied upon to do his mate's work during these short spells of rest. In factories where, for technical reasons, the machinery cannot be stopped, it will be the duty of the Local Inspector of Factories to see that each operative gets his half-hour's rest.

27. GENERAL SUGGESTIONS MADE FOR THE BENEFIT OF OPERATIVES.—It would be a matter for deep regret if, with such exceptional opportunities for learning the wishes and requirements of operatives, we concluded our labours without referring to those points which, although they cannot be considered subjects for legislation, are nevertheless of sufficient importance to the mill-hands, and therefore deserving the attention of Government and the sympathetic consideration of the employers of factory labour:—

(1) Reference has been made in paragraph 24 of this report to the great inconvenience experienced by the operatives of Bombay in finding out the time at which they ought to start for their work. It is obviously impossible that the Bombay Municipality, in the interest of the public, can allow fifty or sixty factories to keep blowing their whistles at odd times between 4 and 6 a.m. On the other hand, to deprive the operatives of all chance of warning as to the time is a great hardship to 40,000 or 50,000 of the ratepayers of the Municipality. We would suggest that the Municipality should allow that kind of whistle which causes the least annoyance to be used once in the morning for each manufacturing centre in Bombay. The Millowners' Association might fix on the mill which would be the most convenient one for using this whistle for the whole neighbourhood. If a proper calendar showing the hours of daylight was used, and this warning whistle sounded half-an-hour or three-quarters of an hour, or even one hour, before the beginning of work, it would meet the necessities of the mill-hands and give them what they greatly want now—the exact time at which the mill will begin work. The Municipality might, with such an arrangement, allow even a second whistle to be sounded five minutes before the mills commence work, but this does not appear so essential as the first warning.

(2) In their petition to Government, the mill-hands of Bombay have asked that they should be paid their monthly wages on the 15th of the month following that for which it is due. In our opinion, this is a moderate and just request. It still allows the employers to keep 15 days' pay in hand, while it saves the operative the ruinous interest he now has to pay to the money-lenders and grain-merchants. While the millowners save five or six per cent. per annum on this money, the operatives lose from 50 to 100 per cent. on the wages they have actually earned. It only requires the millowners to observe a general rule on the subject to have this grievance removed.

(3) In the petition above referred to, the mill-hands ask that operatives injured, either temporarily or permanently, by the machinery should be provided for. In regard to this subject we find that in most of the large factories it is the practice to allow the injured man either the whole or half his pay during the time he is under treatment. In some factories the philanthropic owners have started a provident fund into which they credit all fines realised from the workmen and all salaries unpaid from any cause. From this fund operatives disabled by injury or disease are supported in comfortable circumstances. We commend this subject to the favourable consideration of employers.

(4) If our suggestion that children should be employed as half-timers is adopted, it will be found most important to provide some means of instruction during two or three of the spare hours that the children are off work. It is not for us to discuss here the advantages of elementary education, and general control and supervision of the rising generation of operatives. These are too obvious to require any advocacy from us; what we would say is, that Local Governments and Municipalities should meet millowners half-way, and do, as is

done in regard to children under other circumstances, contribute half the cost of teaching factory children. Supposing, for instance, that a mill employing 100 children spends Rs. 16 a month for two teachers, the Municipality or Government should double this subscription and provide two more teachers. Looking at it from a pecuniary point of view, the expenditure is so trifling that we cannot doubt that schools would be started without delay in connection with all mills employing a large number of children. It was not to be expected that schools started under the present circumstances could be a success. For it is impossible that a tired and jaded child can work his brain to any useful purpose after his body has been thoroughly worn out with physical exertion.

(5) The operatives are unanimous in thinking that something ought to be done to provide them with medical advice and medicines at the factory. When a man is employed from dawn till dusk he has no time to go to the charitable dispensary for medical aid. This is a matter of considerable importance in a tropical country, where people of all classes are liable to suffer from what at first are slight ailments due to climatic causes, but which, if they are not brought under early treatment and cured pass on to fatal forms of disease. Happily, we find in most of the mills about Calcutta and in some in Bombay, Ahmedabad, and Cawnpore, that millowners have already provided for medical advice and treatment for their operatives. We desire to bring this subject to the consideration of those employers of factory labour who have not yet adopted a dispensary system. The cost is trifling, whereas the benefit of the health of the operatives, and therefore to their power of work, is very great. In this connection we ought to mention that we have been supplied by Dr. B. S. Shroff with a pamphlet advocating a scheme for the provident and medical relief of mill hands in Bombay. We commend this subject to the notice of millowners and to those interested in the welfare of the operatives.

28. LOCAL REPRESENTATIVES OF THE OPERATIVES.—We cannot conclude our report without thanking Messrs. Lokhanday, Framjee, and Ghose, who were appointed to assist in our work, for the great help that we have received from them in our enquiry and for the trouble they have taken to find witnesses and obtain other information for us. We would especially mention here the services of Mr. Narayan Meghaji Lokhanday, the President of the Mill-Hands' Association, who worked earnestly both in Bombay and Ahmedabad, and has always presented his views on the questions we have been considering with moderation and fairness. We would also mention the services of Mr. S. P. Kelkar, a missionary of the Prarthana Samaj, who takes an interest in the welfare of the operatives of Bombay, and who took the trouble to bring witnesses before us and to place his experience of their wants and wishes at our disposal.

29. In conclusion, we hope we may be allowed to say that we have been profoundly impressed with the vast and far-reaching benefits which the people of India are deriving from the development and prosperity of the great industries which we have seen on our tour through the country. It would, in our judgment, be a great calamity if by any injudicious recommendations or unnecessary restrictions the prosperity of those industries was endangered.—We have, etc.

A. S. LETHBRIDGE, President,
PIYARI MOHAN MUKHARJI,
SORABJEE S. BENGALLEE,
MUHAMMADHUSAIN,
Members.

NOTE BY MR. SORABJEE S. BENGALLEE.

I sign the above Report, subject to one reservation. I entirely disagree with the recommendation to permit women to work in factories for more than 11 hours in a day under circumstances such as are found to exist in the cotton mills of Ahmedabad. In England it was not until power was employed to move spinning frames and afterwards looms that the evils of excessive labour became painfully evident. Hence legislation there had first to deal with spinning and weaving factories moved by power (*vide* Bederave's Factory and Workshop Act, 1878, page 9). We find evils like these prevailing in Ahmedabad, but instead of nipping them in the bud, and thereby preventing their growth and expansion into other parts of India, the Report proposes to tolerate them, by permitting women, under sanction of the Local Government, to work beyond the maximum of 11 hours, now proposed to be fixed by law—that is, to labour as long as the male operatives, and at as heavy a task, from 12 to 14 hours per day.

If this recommendation is adopted, the intention to restrain factory women from overwork will be frustrated; and, further, the proposed exemption

will be wrong in principle. The millowners of Ahmedabad may or may not carry out the threat of dismissing all women from employment, when they are prohibited, owing to a Legislative Act, from working the same period of time as adult males. But I do not see why the excellent system of working by shifts prevailing in Calcutta should not be adopted in Ahmedabad, instead of the present method. By this shift-system a factory may work continuously from 12 to 14 hours, yet a woman's work can be limited from nine to 10½ hours during the day without any difficulty.

SORABJEE S. BENGALÉE.
Calcutta, the 13th November, 1890.

THE RATING OF MACHINERY.

Two Bills having the same object, viz., An Amendment in the Law relating to the Rating of Hereditaments containing Machinery, have been introduced into the House of Commons. The first of them is identical with that brought in last session, except that machinery in collieries is added to that of gas and water works, and is exempt from the operation of the Bill. Its specific clauses are:—

1. From and after the passing of this Act, in estimating for the purpose of assessment to the poor rate, county rate, borough rate, or any other rate leviable upon property rateable to the relief of the poor, the rateable value of any tenement or premises occupied for any trade, business, or manufacturing purposes, the annual value of the machinery in this section specified upon such tenement or premises shall be taken into consideration; that is to say:—

(1) Water wheels, steam, gas, air, and electric engines, steam boilers and all other fixed motive powers and the fixed apparatus thereof;

(2) Shafts, wheels, drums, and other fixed power machinery which transmits the action of motive power to other machinery, fixed or loose.

2. Save as in the last section provided, no machinery, whether attached to the tenement or premises or not, shall be taken into consideration in estimating such rateable value.

3. Nothing in this Act contained shall apply to the rating of waterworks, gasworks, or collieries.

This Bill was read the first time on November 26th, and is put down for second reading on February 11th.

The second Bill (Rating of Machinery (No. 2) Bill) was also read for the first time on November 26th, and is put down for second reading on February 25th. It embodies the amendment to the Bill which was prepared by the Attorney-General last session. Its main clauses are:—

1. From and after the passing of this Act, in estimating for the purpose of any valuation list or poor or other local rate the gross estimated rental or rateable value of any hereditament occupied for any trade, business, or manufacturing purposes, any increased value arising from machinery which is machinery for any manufacturing process, and is only fixed to the hereditament for the purpose of steadying it, and which can be removed without injury to the hereditament or to itself, and does not require any special construction or adaptation of the hereditament in which it is used, shall be excluded.

2. Nothing in this Act contained shall apply to the rating of waterworks, gasworks, or collieries.

Upon a comparison of the substantive portions of the two Bills, remarks the Manchester Chamber of Commerce *Monthly Record*, it will be seen that the essential difference lies in the methods by which they respectively seek to accomplish the purpose in view. The first defines the portions of machinery (motive power and transmitting machinery), which may be rated, leaving all other kinds (driven machinery) to be exempted. The other one (Bill No. 2) defines the kinds of machinery which may not be rated, leaving those not included in the definition still subject to rating. Objections have been raised against one portion of the Attorney-General's amendment, viz., the words "special construction," on the ground that the expression "construction" might include all buildings erected for the purpose of carrying on a particular industry. It is also observed that under the proposed clause some machinery in some parts of the country which are now not rated might in future be rated. But it must be remembered that the exemptions referred to are made only by the remissness or apathy of certain rating authorities which cannot long continue, and that if the law as it stands, and as interpreted by the country, be not amended, not only will these machines be rated, but every machine in all industrial and manufacturing buildings will very soon be made subject to assessment.

The first Bill is backed by Mr. Knatchbull Hoggess, Sir Bernhard Samuelson, Sir William Houldsworth, Mr. Winterbotham, Mr. Gerald Bal-

four, and Mr. Tomlinson. The second Bill is brought in by Mr. H. S. Wright, Mr. Oldroyd, Mr. T. H. Sidebottom, Mr. Herbert Gladstone, Mr. J. A. Bright, Mr. Mather, and Mr. Mowbray.

CHINEY CLOTH.

In announcing the death of Mr. Samuel Mills, of Levenshulme, Manchester, the credit is given to him of having invented both *mousseline de laine* and chiney cloth. So far as the first of these fabrics is concerned the claim may be correct enough, for the date of his introduction of the material tallies closely with the time at which it became popular, and there need be no hesitation in acknowledging that he may have originated another material to which the name of chiney, cheney, or chenise cloth was given. But cheyneys, cheanies, or cheneyes, were known and worn long ago—and thereby hangs a tale. First, mentioning that they were returned in 1739 as made of combing wool, and that we know from Sir Josiah Child's allusion to them in 1725 that they were largely made at Norwich, we turn to the narrative of a Northamptonshire manufacturer, published in 1739, and then let him tell his own story:—

A few years ago a merchant that lived in Goodman's Fields persuaded one George Gwin to go to Lisle, to teach the French to cast and cut the brass rolls and make the other parts of an engine to water harrateens and cheyneys withal. And, when I heard of it, I went to Lisle to persuade him to return to England and not to teach the French that art. At first he seemed to comply, and told me he would return in a short time; but, when I left him, they still persuaded him to stay, and some time after I applied to the Board of Trade to have some iron that was cast at the bank-side, Southwark, stopped from going abroad to Mr. Gwin; and, although I attended a great many times at the Board of Trade and the Custom-house, I could not prevent those pieces of iron being sent abroad. This iron was to help to make another engine that was to be sent to Toulon. I having had a great deal of trouble to get Gwin to England, and to stop, if possible, this iron from going abroad, but all was unsuccessful. Then I applied to a certain honourable gentleman to have him recalled, who was pleased to comply with my request, and wrote over to my Lord Waldegrave, which is the King of Great Britain's ambassador at Paris, who immediately sent and ordered Mr. George Gwin at Lisle, by the hands of Mr. W——s, the messenger, and the purport of this order was, that Gwin should return immediately to Great Britain, his native country, or he should be declared an alien, &c., as the law in that case directs. Upon Gwin's receiving of this letter he immediately returned to London, his old place of abode; so that the rolls that were designed for Toulon were never finished, neither had the French learned how to cast them, and cut the figures on the rolls, &c., finished, they have made, dyed and watered a great many cheyneys and harrateens, both to serve themselves, and other countries, that we had used to serve. But I do humbly hope, when this engine is worn out, no man from Great Britain will go over to make them another.

This not only gives us full information as to what cheyneys were, but is as pretty a picture of the old style of managing trade affairs as could be found anywhere.—*Warehouseman and Draper.*

The Peel Spinning Company, Limited, Bury, have placed their order for blowing-room machinery with Messrs. Lord Bros., Todmorden. This is a repeat order, and for the new mill in course of erection.

An unofficial and unconfirmed report is current in trade circles to the effect that two of the leading linen thread manufacturers contemplate amalgamation. The concerns mentioned are Messrs. Wm. Barbour and Sons, Limited, of Lisburn, Ireland, and Messrs. Finlayson, Bousfield and Co., of Johnstone, N.B.

Or what material was the coat of Jesus made, for which the Roman soldiers cast lots? "Not of silk," is the answer of a writer whose opinion on such a subject is entitled to respect. "A silk garment at that time would have had to come from the far East, and would consequently have been too expensive to be in the possession of a Galilean peasant. Moreover, had it been of silk, the fact would have been sufficiently remarkable to be specially mentioned by at least one of the evangelists." We are told that it was woven from the top and that without seam. This is explained by the writer in question to mean that it was wrought from above, that is, on the high warp. He thinks that it was an ordinary tunic, such as were made at Tinnis, on Lake Menzaleh, in Egypt, for exportation.

HENRY BANNERMAN AND SONS, LIMITED.

ITS ORIGIN, RISE, AND PROGRESS.*

In the belief that it may not be too much to assume, that the history of a home-trade house which has occupied a prominent place in the mercantile annals of Manchester, and has had widespread connections extending over the whole of the British Isles and beyond, may possibly possess some interest to those who have business relations with it, it has been thought that a time marked by special developments would be a favourable one for putting on record—in a more permanent form than recent journalistic references could do—the chronicle in brief of the leading events which have marked the career of the firm, together with some references to its present constitution, and also—in order to promote a more familiar understanding—the portrayal of some of those persons associated with it who have more prominently to do with the administration of its affairs.

In tracing the origin of the house we are taken back to a time which has something of the flavour of antiquity about it, inasmuch as it was within the first decade of the present century that Mr. Henry Bannerman, a prosperous Perthshire farmer, sent his eldest son, David, to Manchester, to test the prospects of success in the cotton trade. On his arrival the pioneer of the future fortunes of the family took to himself a partner, and together they commenced business in a warehouse in Marsden-square. The experience of a year or two of trading proved so satisfactory, that Henry Bannerman was induced to give up his farm, and bring the whole of his family south, to renew the business experiment upon a larger scale. The manner of their coming was not without certain features of picturesque incident. From Perthshire the family travelled to Glasgow, and there embarked in a sailing vessel for Liverpool. The weather was so stormy that for fourteen days they were beating about the channel, and when they were twenty miles from Liverpool it was found necessary to leave the vessel, and row the remaining distance in an open boat. In this adventurous manner the port was eventually reached.

Mr. Henry Bannerman had five sons, and four of these, David, Alexander, John, and Henry, he took into partnership, and so established the firm of Henry Bannerman and Sons. Of the remaining son, Andrew, it may be noted that he was afterwards associated in partnership with Mr. J. S. Grafton in the calico-printing business, the firm being at one time known as "Bannerman and Grafton." The new firm of Henry Bannerman and Sons was first located in some rooms between Cleveland Buildings and Spring Gardens, in the then narrow thoroughfare of Market-street-lane. Though it was in the centre of business Manchester, Spring Gardens was at that time not such a misnomer for a street as it is now, the fact being that at least ten years subsequent to the date of which we are writing, a colony of rooks found a resting place in some trees in a garden at the King-street end of it. Those who walk along Market-street now can hardly realise the quaint appearance it presented in those early days, as we find it depicted in contemporary prints. The pile of warehouses known as Cleveland Buildings still remains, and the view along the enclosed space, with the signboards stretched across it—as seen through the archway in Market-street—affords a curious example of the warehouse architecture of that primitive time. It was a time when, probably, the whole population of Manchester did not exceed 90,000 persons, and when a deputy constable and four beadies were found sufficient to keep the peace in the daytime. The manner of doing business in these and later days, as we get glimpses of it in local directories, reads very quaintly now. A list was given of the country manufacturers who visited town, and each of them appears to have had some particular inn where he might be heard of. For instance, we read how Richard Hodson, fustian manufacturer, of Bury, may be found on Tuesday and Friday at 2, Bailey's-court, or at the Griffin at Dangerous Corner. The methods of conveyance were by road and canal, the carriers by each being duly advertised, and coaches were arriving and departing daily from the Swan, the Palace, and the Royal Oak, in Market-street-lane, or the Bridge-water Arms, in High-street, close by.

Mr. Henry Bannerman, as the head of the firm, took charge of the finances, and to the sons were allotted the duties of buying and selling. The goods dealt in were fustians, cotton ticks, grey and white calicoes, nankeens, muslins and plain fabrics generally. In time, business had so prospered that it was found necessary to remove to larger premises

* Reprinted, by permission, from Messrs. Bannerman and Sons' "Diary and Buyers' Guide."

in Marsden-square, the warehouse chosen being at the corner of Cannon-street, and which was afterwards occupied by Messrs. Thomas Barnes and Co. The house became specially famous for Scotch, Blackburn, and Bolton muslins, and its customers were distributed over Scotland, the North of England, Wales, and Ireland. At this time there appears to have been no trade with the Midlands or the South of England.

Mr. Henry Bannerman died in 1823, and his eldest son, David, became the head of the firm. Under his management the business continued to increase, until still larger premises were required, and a removal was made to the warehouse adjoining the Royal Hotel and Bridgewater Arms, in Market-street. The *Court Leet Records* show that in 1828 Mr. David Bannerman was elected Boroughreeve, and had the distinction of being the first Scotchman and Dissenter appointed to that office. From these same records it would appear that the office was not always a coveted one, inasmuch as we read that at a later date "Mr. William Nield was nominated, and because he refused to serve, on the ground of ill-health, he was fined £200, a fine of £150 inflicted the previous year on Mr. Robert Barbour having had no effect." Mr. Richard Cobden, who was a member of the Court Leet, protested against these fines, and it was his vigorous action that afterwards led to the incorporation of the borough. Mr. David Bannerman died in 1829, at his house in Mosley-street, at the early age of 46, leaving a widow and a family of three sons and two daughters. Under the management of the surviving partners the business continued to increase. In 1833, the Excise duties having been removed from printed calicoes, a department for these goods was opened; merinoes, Bradford stuffs, and flannels being also added. More space being required, a communication was made by means of a covered wooden bridge (still existing) with a new warehouse on the other side of West Mosley-street. In time, these premises proved too small, and a new departure was taken. Land in York-street, then being used for a timber-yard, was bought, and a block of buildings erected, which was at first divided into several warehouses. The style of architecture, like that of others in the rear of the Infirmary, was then considered impressive. It now marks the stage between the primitive simplicity of the Cannon-street order, with its cramped dens of dingy brickwork, and the florid decorated style of a more recent time. It has been said of it that "it was chosen by men who were too shrewd to look up their capital in needless ornament, and who thought it was sufficient for business purposes to erect a building of brick and stone which should be commodious and useful without being ugly. In this they anticipated Mr. Ruskin's dictum that 'you must not mix ornament with business, any more than you may mix play, and that customers should not be baited to warehouses as moths to a candle, but should be attracted by honest dealing and right wares.'"

In 1842 a removal was made to a portion of the new premises, which before long, however, were completely occupied, and then found not at all too large for the expanding trade. In 1844 fresh partners were added to the firm, these being Mr. William Young, a grandson of the founder, Mr. James Alexander Bannerman, a son of the late Mr. David Bannerman, and Mr. Archibald Winterbottom, who for some time had managed the Bradford and Silesia departments.

In 1846 Mr. Alexander Bannerman, who had been appointed one of the first borough magistrates under the Incorporation Act, died at the age of fifty-two, and in 1848 Mr. Philip Gillibrand, who occupied a prominent position in the counting-house, and who had been with the firm since 1829, was taken into partnership. In 1850 Mr. Henry Bannerman withdrew from active participation in the working of the business, and left Burnage Hall for Hutton Court, in Kent, where he had purchased an estate.

In 1852 Mr. David Bannerman, a son of the late Mr. David Bannerman, was taken into partnership. In 1858 Mr. Archibald Winterbottom, who had been identified with the working of a patent process of printing certain silvery-looking patterns on linings which were known as "Dacians," retired from the firm, and commenced business on his own account in Mosley-street. In York-street, with increased facilities, the business took a wider range. Many departments were added, and the Canadian shipping trade became a prominent feature. In 1864 the firm entered upon a new departure of an important character, whereby they became spinners and manufacturers as well as merchants. The first acquisition consisted of the North End and River Meadow Mills, Stalybridge. In the following year the Brunswick Mill, Ancoats, was added, and subsequently the Old Hall Mill, Dukinfield. These businesses, which are closely associated with the ware-

house, are now known as "The Bannerman Mills Company, Limited," of which something more may be said presently.

In one time Mr. John Bannerman, following the example of his brother Henry, withdrew from close association with business, and went to live at Wypstone Leys, a notable house on the banks of the Wye in Monmouthshire, where he had purchased an estate; and here, in 1870, he died. Mr. Henry Bannerman, who had filled the office of High Sheriff of Kent, died at Hutton Court in 1871. His landed estates are now held by his nephew, the Right Hon. H. Campbell-Bannerman, who assumed the name of Bannerman on his succession to the property. In 1874 Mr. David Bannerman was appointed one of the city magistrates. In 1879 Mr. Philip Gillibrand retired from the firm, after being associated with the business for a period of over fifty years. In 1880 Mr. Charles Wright Macara, Mr. David Alexander Bannerman, a son of the present Mr. David Bannerman, and Mr. William Henry Young, a son of Mr. William Young, were taken into partnership, and under the guidance of Mr. C. W. Macara, who became the managing partner, and is now the managing director, a process of reorganisation was commenced, which has resulted in important changes. The main feature of these has been the development of the departments belonging, or allied, to what is specially known as the Manchester trade. In 1886 Mr. David Alexander Bannerman died at the early age of 29. His death was the result of an accident in a swimming-bath. By this unfortunate mischance the firm lost a partner of remarkable promise, and who was eminently popular in his business and private relations. After his death his place in the warehouse was taken by Mr. W. H. Young, who had previously devoted his attention to the mills. In 1890 the firm underwent an important change as regards its constitution. In view of the advancing age of the senior partners, and also for family reasons, it was converted into a limited liability company of a strictly private nature. The partners then remaining in the firm were Mr. William Young, Mr. James Alexander Bannerman, Mr. David Bannerman, Mr. Charles Wright Macara, and Mr. William Henry Young; all these names are included in the new directorate.

In concluding this brief record of the more salient points in the history of the firm, it may be said that the process of reorganisation which preceded its conversion into a limited liability company has been still further developed, and no effort has been spared to make the organisation as complete as possible, so as to meet the pressing requirements of the modern conditions of the home-trade in every direction. It may also be noted, by the way, that advantage has been taken from time to time of the retirement from business of several Manchester home-trade houses, to secure the services of some of their most prominent managers and representatives. In order to deal in the most effectual manner with the demands of a largely-increasing business, and so as to secure the rapid transfer, packing, and forwarding of goods, labour-saving appliances of a mechanical kind, and of the most modern construction, have been introduced.

The close connection existing between the warehouse and "The Bannerman Mills Company, Limited," has already been alluded to. The conversion of these mills into a company of a limited liability nature was effected in 1889. The views of them—with which our friends will be familiar—may help to show something of their magnitude and importance. A detailed and illustrated description of them was given in our article *From Cotton to Cloth*. They have been renewed with machinery of the very latest and most improved kind, and some idea of their powers of production may be gained from the fact that 200 tons of coal are consumed, and 120,000 pounds weight of cotton are passed through them each week. One interesting feature of the complete organisation of these mills, and which we have thought worthy of illustration, is the existence of the private volunteer fire brigades. Where so much valuable property is concerned the utmost care is necessary. The volunteers are all men employed in the mills, and they are carefully drilled by an experienced fireman in connection with the well-known firm of Messrs. William Rose and Co., of Manchester. The appliances enable jets of water to be thrown higher than the roofs of the mills, and so efficient are the men, that they are ready to deal with a fire in any part of the buildings within two minutes of the alarm being given.

A complete and widely ramified system of telephonic communication connects these mills with the Liverpool Cotton Market, the Manchester Exchange, the Warehouse, and the private residences of the Managing Director and the Mill Managers.

The attempt to combine the nine mills manufacturing grey cotton goods in Canada into one company, or trust, has been accomplished, according to the mail advices from Montreal dated December 12, by the Dominion Cotton Mills Company. The new company is to be known as the Montreal Cotton Manufacturers' Company, and consists of Montreal capitalists, Mr. A. F. Gault being president and Mr. Grenier vice-president. The mills were built at a cost of 4,800,000 dol., and have been acquired by the new company for 3,800,000 dol. The new management will begin operations on January 1. Two or three of the smaller mills are to produce exclusively for the markets of China, the West Indies, and South America. The capital of the new company is 5,000,000 dol.

Textile Markets.

* * * Owing to the Christmas holidays we have had to go to press early in the week, and consequently most of our market reports are held over.

COTTON.

MANCHESTER, WEDNESDAY.

The approach of the holidays has visibly affected our market, there being only little inclination manifested to enter into further contracts during the remaining portion of the present year. Trade at the moment is very slow all round, and certainly nothing is found of a very encouraging nature, though prospects are regarded with great hopefulness. Amongst general matters external to the buying and selling operations we regret to have to record that the Weavers' Associations, through their representatives, have rejected the general weaving list which was drawn up at such a cost of time and labour by their own most experienced leaders and the representatives of the employers. This was done at a meeting held last Saturday and adjourned after a four or five hours' sitting to Sunday morning, when it was continued for a similar length of time, and concluded with the adoption of a resolution rejecting the list. The ground on which this has been done appears to have been a disappointment that the list did not mean a general advance in the respective districts. It was impossible that this could be so, as the principle on which it was based was simply to rectify inequalities and place the various districts on a level ground for competition. The greatest sufferers will be the operatives themselves. On Tuesday afternoon the employers of North and East Lancashire held a meeting to consider the demands for an advance of wages of their operatives in the spinning and card-room departments. The advance was granted. After to-day business is practically suspended until Monday next.

COTTON.—There has been a quiet demand for the raw material throughout the time covered by this report. Dark and foggy weather has interfered materially with the extent of business, and the turnover has been reduced thereby. The holidays have also brought with them the usual reluctance to do business to any extent further than necessity demands. Poor cables from across the Atlantic have also had a depressing effect. The market has consequently been weaker, futures fluctuating and spots declining. The former were for a moment driven down to 5d., but they rallied immediately. The results of the week's changes are that spots are reduced from 3½d. to 3½d.; and futures are decidedly lower, having declined 3 points for Dec., 3½ for Jan.-Feb. and intervening positions to Aug.-Sept., though Sept.-Oct. has only receded 3 points.

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

	Import.	Forw'd.	Sales.	Stock.	Export.
American	72,907	44,510	30,370	583,990	2,138
Brazilian	..	3,503	1,560	29,610	..
Egyptian	..	10,695	4,408	1,180	76,000
W. Indian	..	3,359	267	380	18,840
E. Indian	..	323	2,803	3,460	165,320
Total	87,284	55,491	36,950	873,850	4,123

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

	G.O.	L.M.	Mid.	G.M.	M.F.
American	41½	41	40	39	38
Braz.
Egyptian
W. Indian
E. Indian
Perman
Ceara
Parabá
Maranhám
Egyptian
Ditto, white

	Fr.	F.F.	G.F.	F.G.F.	Gd.	F.G.	Fine
M.G. Broach	—	—	—	—	—	4 1/2	4 1/2
Dhollerah	3 1/2	3 1/2	3 1/2	3 1/2	4 1/2	4 1/2	4 1/2
Oomra	3 1/2	3 1/2	3 1/2	3 1/2	4 1/2	4 1/2	4 1/2
Bengal	—	—	—	—	—	—	—
Tinnivelly	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2

The cotton market will be closed from December 31st to Monday, January 5th.

YARNS.—Yarns are quiet all round, and very little business is being transacted. Here and there spinners may be met with who are willing to accept a fractional decline, but they are not numerous. Taken generally the market keeps remarkably steady. The better grades of yarn are most in request, as owing to the inferior quality of this year's crop, manufacturers are feeling themselves compelled to purchase a slightly better quality.

CLOTH.—Goods all round are quiet as before, except for India, and manufacturers complain bitterly of the unremunerative state of their business. The margin between cost and selling price is almost a 1d. per lb. less than it ought to be to give them only a reasonable return for their labour and investments. The fairly good enquiry in progress for India during the past ten days or fortnight has been interrupted by the unstable condition of silver and its effect upon the exchanges. It is not likely that much effort to do business will be put forth until the holidays close.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

TUESDAY, 23rd Dec., 1890.

There is no marked change in our market since last week.

The fluctuations in Exchange are very perplexing, and the great shock in the South American market caused by political troubles there and financial difficulties in London, affects the Dundee trade injuriously.

Jute in all positions is a shade easier to buy, and Calcutta wires to-day rather lower rates for late shipments.

Flax is still dragging, no marked change is quotable, but tows are offered at very low rates indeed.

Jute yarn is not dearer, but for fine foreign warps there is an excellent enquiry, and the best makers are decidedly firm.

Common 8 lb. cops are offered at 1/2 with buyers at 1/2 less.

For heavy yarn the demand is less active, and some spinners would take a big contract at a shade lower prices.

Flax yarn in prime warp is firm, in all other kinds it is weak.

Tow yarns are specially ill to move, and prices are irregular.

Jute goods are wanted, but at very lowest list prices, and for forward delivery some makers are disposed to concede a little to secure contracts.

For the best wide goods, however, the market is quite strong, and the makers of such cloth being well engaged they command their own terms.

Linens are in fair demand, but there is not much business passing at this season of the year.

Some of the looms in Forfar are affected by the new American Tariff, and in Arbroath one hears of the stoppage of certain kinds of canvas looms.

The coarser and heavier linen trade is busy however.

In Dundee the fancy jute trade is brisk, and for new designs the makers are pressed to deliver.

Cords, rope, and twines are all active, and the makers are busy.

WOOLLENS AND WORSTEDS.

GLASGOW.

Messrs. Ramsey and Co., in their report dated December 23rd, say:—

Wool.—There is very little business passing in the wool market this week. In view of the closing

of the mills for the Christmas holidays consumers have not been inclined to operate beyond the most pressing wants. Trade will likely be quiet now till work is resumed. Prices are nominally firm.

SHEEP SKINS.—The supply was a full average, with many lots of very prime quality. Competition was freely maintained, and values are unchanged.

Gazette News.

NOTICES OF DIVIDENDS.

J. Froggatt, T. Froggatt, and G. Froggatt, trading as Joseph Froggatt and Sons, all residing and trading at Newtown, Cheshire, candlewick spinners; 1d., final.

J. Hall and Rachael Hall, trading as James Hall and Son, Irwell Bleach Works, New Bridge, Radcliffe, bleachers; 13s. 6d., first and final.

PARTNERSHIP DISSOLVED.

William Goldthorpe and Samuel Watts, trading as Benjamin W. Wood, Lomax-street, Salford, raisers, stiffeners, and finishers.

Joint Stock and Financial News.

NEW COMPANIES.

SAMUEL HEGINBOTTOM AND SONS, LIMITED.

Registered by Kerr and Lanham, 3, Chichester-street, Chancery-lane, with a capital of £80,000 in £10 shares. Object, to acquire the business of a cotton spinner and manufacturer now carried on by Thomas Heginbottom at Junction Mills, Ashton-under-Lyne, and 15, York-street, Manchester, under the style of Samuel Heginbottom and Sons, and to carry on business as cotton spinners, doublers, etc. The first subscribers are:—

	Shares.
T. Heginbottom, Ashton-under-Lyne	1
H. Heginbottom, Ashton-under-Lyne	1
W. Heginbottom, Ashton-under-Lyne	1
A. Heginbottom, Ashton-under-Lyne	1
Mrs. Heginbottom, Ashton-under-Lyne	1
J. Nield, Ashton-under-Lyne	1
W. Smith, Ashton-under-Lyne	1

There shall not be less than three nor more than seven directors; the first are the first three subscribers to the memorandum of association and J. Nield. Qualification, £100. Remuneration to be determined in general meeting.

HIGHFIELD SPINNING AND MANUFACTURING COMPANY, LIMITED.

Registered by Waterlow Brothers and Layton, Limited, Birch-lane, E.C., with a capital of £25,000 in £5 shares. Object, to acquire land at Heywood, Lancashire, and erect thereon cotton mills, weaving sheds, etc.; to carry on the business of cotton spinners, etc. The first subscribers are:—

	Shares.
C. C. Rostron, Railway Hotel, Heywood	100
J. Hobson, 2, Regent-street, Heywood	50
W. Booth, 40, Lytham-place, Heywood	20
R. Taylor, Angel Hotel, Heywood	40
D. Healy, Brooklands, Heywood	40
J. Potts, 75, Wellington-street, Heywood	20
A. Chaddock, Market-place, Heywood	20

There shall not be less than five nor more than seven directors; the first to be elected at the first general meeting, when their remuneration will be decided. Qualification, 20 shares.

THE BRIDGE END MILL COMPANY, LIMITED.

Registered by Stubbs and Co., 43, Gresham-street, E.C., with a capital of £10,000 in £100 shares. Object, to acquire the spinning mill known as the Bridge End Mill, Padham, Lancashire. Most of the regulations of Table A apply.

Patents.

ABSTRACTS OF SPECIFICATIONS.

11452. July 17, 1889. **Estimating the moisture in yarn, cotton, &c.** J. J. STOTT, Barton House, Deansgate, Manchester.

An apparatus for estimating and indicating the amount of water in yarn, cotton, or other material. A given weight of the material is placed in a cage, carried by a frame connected to a spring balance or other weighing apparatus. The dial of the spring balance is so arranged that the index points to zero when a given amount of material is placed in the cage. The latter projects into an oven, heated by gas burners, etc., and provided with a thermometer, ventilator, etc. The balance may be provided with two dials if desired, one indicating the absolute loss in weight and the other being graduated so as to indicate the percentage of moisture in the material. Two or more cages, each provided with a spring balance, may be arranged side by side projecting into the same chamber when it is desired to make comparative tests of several samples simultaneously. *Ed. Drawings.*

11451. July 18, 1889. **Leather sheets and belt** J. BARBOUR, Falls Foundry, Belfast.

Heckling machine sheets, etc., with eyelets or teeth for gearing with driving wheels, driving belts, etc., are prepared by soaking the hide or leather in water until soft, stretching, and then trimming when dry. The stretching apparatus consists of clamps, composed of grooved plates bolted together and embraced by clips. These are secured on the ends of the sheet, and one is suspended by ropes and hooks, while the other are hung weights. *Ed. Drawings.*

11454. July 18, 1889. **Looms.** W. BARKWELL, 15, Bolsover Gardens, Sherwood Place, Nottingham.

In bar looms for producing chenille with twisted or plaited warp threads the latter are passed through metal heads fixed on two shafts. One shaft is worked up and down from a tappet, through treadles, and the other shaft is moved to the right and left by the action of a cam, lever, bar, and spring, to produce the necessary crossing of the threads. *Ed. Drawings.*

11583. July 20, 1889. **Weaving or Darning Apparatus.** B. WOODROW, Corporation-street, Birmingham.

The apparatus is applicable for weaving fancy braids, ribbons, etc., or for darning hosiery and other fabrics. It comprises a rectangular metal frame having a row of projections at one end. A slide, adjustable in position on the frame, carries a rocking warp-lifter provided with two sets of notched projections, one set at right angles to the other. The warp thread is fixed to a notched plate, and passed to and fro over the projections. The web is inserted by means of a shuttle, and the shed is changed by turning the lifter a part of the way round and back again, as required. For darning purposes the fabric is passed over a block of cork, etc., and the frame is sprung upon it. A few stitches of the fabric are taken up at each side by the needle. The details are described, and may be modified. *Ed. Drawings. Patent applied; case not yet decided.*

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END OF VOLUME III.

