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. 81. SATURDAY, NOVEMBER, 8TH, 1890. PRICE THREEPENCE.

Annual Subscription, 12/6 Post free.
Six Months .. 6/6 ..
Three .. .. 3/6 ..
For Foreign Subscriptions, see first column below.

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
MR. BYRON ROSE, Representative.

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

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Current Topics.

BRITISH TEXTILE INDUSTRIES FROM A GERMAN POINT OF VIEW.

It is often interesting and instructive to know what our neighbours think of us, especially when they are in any respect rivals; therefore a recent article on English textile industries in an influential German contemporary deserves a brief notice. Attention is therein called to the steady growth of our textile manufactures since 1856, as indicated by the increase in the number of workers, the total number of textile operatives in the United Kingdom having risen from 682,497 in 1856 to 1,084,631 in 1889. Special notice is taken of the decrease in the number of children employed in textile industries since 1874. Whereas there were in that year 125,886 boys and girls under thirteen years of age thus engaged, there were only 96,499 in 1889, though the total of workers was considerably higher. This remark, however, does not apply to Ireland, where the number of juvenile workers has risen from 3,724 in 1874 to 5,903 in 1889. Comparative tables are then given of factories, spindles, power-looms, and operatives, in England, Scotland, and Ireland respectively, for the departments of the cotton, woollen, and worsted trades. In respect of the cotton trade, it is remarked that the number of factories exhibits a decided decrease, whereas the number of spindles, looms, and operatives have increased—a phenomenon ascribed to the fact that many of the smaller establishments with old-fashioned arrangements have been replaced by modern structures and machinery. This remark, however, it is observed, does not apply to Scotland and Ireland, where there is a real decline in the cotton industry, with the exception of the sewing-cotton branch, which has developed greatly in the West of Scotland. The woollen trade is also spoken of as progressing, and the worsted spinning department as making rapid strides. So, looked at from a German point of view, the textile industries of the United Kingdom, regarded as a whole, are not only not in a state of decay, or even stagnation, but are full of vigorous life, and rich in promise for the future.

OPERATIVE SPINNERS AND THE WAGES QUESTION.

Our contemporary, the *Cotton Factory Times*, is taking time by the forelock. In its issue of yesterday it raises the question of the present being a very suitable time for the operatives in the spinning branch of the trade to demand an advance of wages. Its views are based on the flourishing condition of the spinning branch, in which it says the margin between cost and selling prices of yarn is higher than ever it has been since 1875. This statement is no doubt quite correct, but unfortunately is not the whole truth. The writer to whose article we refer tells a little more of the truth when he says:—

> The present margin, both for twist and weft counts, is considerably higher than it has been for many years past, and has been brought about mainly by the rapid and serious decline in the price of American cotton, which has come down 1¼d. per lb. since the middle of August. Yarns have altered very little compared to middling American, hence the reason for the improved margin in such a short space of time as to warrant the employers in advancing wages.

Had the able leader of the operatives, whom we presume to be the writer of this article, given due consideration to the facts he himself has stated, he would have come to a different conclusion and would probably have held his pen in more restraint. It is very true that the existing margin has been brought about by the rapid and serious decline of cotton prices, and the little change that has taken place in yarn rates. But does he not know that the margin is, to a great extent, a fictitious one, because as yet there has not been time for the fall to break down yarn prices? Does he not know that very little business indeed is being put through at current rates—very much less indeed than the production—owing to the impossibility of manufacturers selling cloth based upon current quotations by spinners? What mean the stoppages of looms in the Burnley, Blackburn, Darwen, and other districts but a lessened consumption of yarn, a decline in value, and a gradual diminution of the margin upon which his incitements to demand an advance of wages are founded? Let the market get settled from its present collapse; let the recent decline get equitably apportioned between the spinner, the manufacturer, and the merchant, and then re-examine the margin, when it will be found very different from what it appears to be at present. To stimulate such a movement upon the basis of present rates would simply be to delude the operatives who constitute his following and to inflict upon them a cruel wrong.

WILD SILKS.

Our Italian contemporary, *La Tintoria*, sums up concisely a few of the most important facts about wild silk. After pointing out the reason why it is exceedingly difficult to cultivate wild silk, the writer names three classes of the silk-worms which are more important than the others, namely, the *Bombyx millita*, *Bombyx cynthia*, and *Bombyx pernyi*. The silk produced by these worms is called 'wild' because the cocoons are derived from insects that live in a free condition. The *Bombyx millita* yields the silk called Tussah, a textile material of great importance in the manufacture of carpets. The dyeing of tussah is now practised on a large

scale; based on reasonable methods it gives silk of remarkable brilliancy. The worm is found on the trees and bushes of the oak and other plants on the mountains of the Imalcia, and in the plains of Bengal. The thread of Tussah is far more than double the thickness of that of common silk, and consequently has more resisting power, but lacks its most precious qualities. The natives are in the habit of mixing all the cocoons which they collect; if they adopted a method of sorting the cocoons, that is, of putting together those having common properties, the product obtained would be superior to that which now they furnish. As European influence is becoming stronger, it is probable that an improvement will ultimately be effected in this respect. It may be added that the *Bombyx millita* is not the only producer of Tussah in India, as there are many other species of lepidoptera which are used in that country for the preparation of silk. The silk of the *Bombyx cynthia* leaves very much to be desired; the thread is excessively thin and not continuous, and the working up is very difficult.

HOW TRADES-UNIONISM WORKS.

The other day *The Times* had the following:—

A serious strike of the quay labourers employed by the Cork Steam Packet Company occurred yesterday morning, without any previous notice. The men were engaged loading the "Lee" until breakfast hour, and refused to return to work after breakfast, giving as their reason that some union labourers were idle on the quays while non-union men were in the employment of the company, and they did not consider they should allow non-society men to be employed as long as society men were available. The company refused to be dictated to, and hence the strike. The consequence is that the "Lee" lies at the quay unable to leave, and the "Juno," which has arrived from Bristol, lies undischarged. The company have suspended sailings for the present.

We think we have seen in print sentiments of this kind enunciated by a leading official of the cotton operatives, though the subject does not yet appear to have been formally debated, nor any conclusion adopted. Still, the sentiments embodied in this action seem to be spreading so rapidly amongst labourers that there need be no surprise felt if they should develop in our midst. In the same issue of our contemporary the following also appeared:—

An unexpected difficulty has been thrown in the way of Mr. Worthington, the contractor for the construction of light railways in the west of Ireland. In a letter to the *Daily Express*, he states that on Monday a steamer arrived from Barrow, laden with rails for the railway which he is making at Ballinrobe, in the County Mayo. A number of labourers were engaged to discharge it at the Spencer Dock, and were to be paid at the rate of 10s. a day. They proceeded to discharge the vessel, but a telegram arrived from the trade-union in London directing them not to do so. They accordingly ceased work, expressing regret at having to do so. The effect of this action is that the engineer has been instructed that it may be necessary to suspend the work until the trade-union differences are ended, and 1,500 men will thus be thrown out of work. Mr. Balfour has made it a condition with the Midland Great Western Company that the works shall be proceeded with at the earliest moment, and Sir Ralph Cusack, the chairman, is making arrangements to start them at once; but all their efforts will be paralysed if, when the works are commenced, the rails and other materials are stopped in transit, and cannot be delivered. Mr. Worthington, from long experience, apprehends disastrous results from the course the trade-union have adopted to the labourers and artisans in the distressed districts.

There are several points calling for remark in the above quotation: namely, the price being paid for labour, the willingness of the men to work, and the source whence the interference sprang. Can anybody justly affirm that dock labourers are badly paid at the rate stated? We think not, and the labourers themselves agree. The work upon which these men were engaged was a manifestation of the country's benevolence, and this is the manner in which it was received! No statement is made as to why the work was interfered with, but it is probable that the Barrow Dock Co., from the docks of which the vessel came, has in its employ a few non-unionists whom it may be refusing to discharge at the dictation of these petty tyrants. But tyrannical sentiments grow by what they feed upon, and apparently not finding scope enough in the fields of labour have added thereto those of Irish politics. During the course of last week an attempt was made to ship some cattle from a boycotted estate, when an intimation of the fact having been conveyed to the sailors and firemen of the vessels, they immediately struck work and would not resume until the cattle were again put on shore. Are the trades-unionists themselves allied with the Parnellites? This would lead one to conclude so. There is no doubt that the bodies of working men forming our dock labourers, firemen, and sailors include in them large numbers of Irishmen who are probably Nationalists, and are utilising the training they have received in that sphere of action in the ranks of trades-unionism. This theory would probably satisfactorily account for much of the tyranny the trades-unions have begun to manifest. It is well perhaps that the older and more experienced unionists of the cotton trade have taken alarm at the company they have been keeping, and have withdrawn themselves. There is hope for the textile industries in this. It is satisfactory to find since writing the above that the Cork sailors and firemen who refused to carry the boycotted cattle, have been duly convicted under the Merchant Shipping Act of having combined to disobey the lawful orders of their captain, and they have only avoided severe punishment by consenting to do their duty in future. This appeal to the law is an example that ought to be followed whenever and wherever the circumstances admit of it.

THE CONGO STATE AND ITS PROSPECTS.

It is highly desirable that even increased attention should be given to African affairs. While the United States and most of the countries of the Continent are closing their doors more or less to our manufactures, it would be a mark of foresight to put forth every possible exertion in opening up more fully than now every centre of present and possible consumption of our goods. The great Congo State, which under the guarantee of the European Powers has now attained the sixth year of its existence, and has, all things considered, made wonderful progress in the organisation of its territories and the development of commerce, needs the most kindly consideration at the hands of its supporters if it is not to sink under a load of indebtedness, or otherwise fail to achieve one of the principal objects for which it was founded—namely, the suppression of the slave trade over a wide extent of African territory. The laying of the foundations of this State has been an experiment, of which the cost has been under-estimated. It has hitherto been an enormous burden upon the King of the Belgians, who has already performed a service to the people under its sway and to the industrial States of Europe that entitles him to the highest gratitude from them, and he cannot much longer be expected to bear the burden alone, or even with the help of the country over which he rules. The preliminary operations cost his Majesty £350,000, and after the conference of Berlin he bore the entire expenditure, with the exception of a small sum derived from export dues. The annual outlay has now attained about £175,000, which is met by a contribution of £80,000 from Belgium, and £40,000 from the King of the country, £25,000 from export dues, and a few internal receipts. There is a deficit of about £25,000 per annum. The infant state, however, is in bondage, not being free to manage its own affairs, owing to the conditions laid upon it by the Powers. It cannot tax imports to the extent that is absolutely necessary to maintain the government in a state of efficiency, or to enable it to take steps to protect the tribes of its Eastern districts from the raids of the Arab slavers. This it is necessary it should have. Accordingly Mr. H. M. Stanley, in a letter to *The Times*, appeals to the public, asking that this power should be given in order that the State may be enabled to fulfil the obligations into which it has entered. After the work already accomplished it would be an enormous misfortune for the Congo State to collapse under a burden of debt, because there would not only be the loss of the labour and money already expended, but it would set all the guaranteeing powers squabbling as to which or in what proportion each should possess its territories. The development of the State would thus be thrown back for probably a very long period. No country is more interested in preventing this than England, and no part of England nearly so much as Lancashire. It is to a great extent Lancashire calicoes that will in the future pay for the productions of both the Congo State and other portions of Africa. We trust that the Conference now assembled at Brussels will devise some practicable way of affording relief.

THE NEWS FROM AMERICA.

There is a good deal of foolish jubilation shewn by some of the English dailies at the news cabled this week from the United States concerning the Democratic victories at the November 4th elections. One journal in glaring head-lines prefaces the telegrams sent it by a news agency with the words "Utter Rout of Protectionism." One does not expect to find a profound acquaintance with commercial matters in the office of a daily newspaper, but that is no reason why the public should be misled by such obviously premature statements as those indicated. The victories of the Democrats certainly indicate a revolt on the part of the people against the system of excessive taxation which has been promulgated by the Eastern manufacturers through their obedient and humble servants in Congress, but that does not imply a return to free trade, which is opposed to the principles of both parties. With this timely reminder against the jumping to rash conclusions which has been observable of late in certain quarters, we may admit that the Republicans have received a blow which they richly deserved. At the same time it may as well be pointed out that neither party is likely to bring forward legislation that will benefit this country. Besides, the Republicans have a card up their sleeve in the shape of the Force Bill, which, if played properly, may altogether alter the electoral map of the South—the great stronghold of their opponents. They have, at any rate, the power to pass the measure, and to push it down the throats of those who object to it. Nothing is so uncertain as the course of American politics, but, whatever happens, our manufacturers may make up their minds that the McKinley Bill is a very tangible fact. If the American people in future elections persistently defeat the advocates of protection, we may, in the course of

years, witness a change in the fiscal policy of the country. According to many of our English friends, tariff reduction in the United States would eventually be all the worse for us, while absolute free trade would result in our being deposed from the kingly position we now occupy on the commercial throne, and in the installation of America in our stead. But this is not our opinion. We, therefore, view with pleasure recent events in the States, though we do not care to stultify ourselves by imitating the action of a north of England daily, which declared recently that after all protection in the United States would be the best thing for us in the end, and now regards the recent Democratic victories exultingly as omens of the "downfall of protectionism!'

AN UNTRUTH NAILED TO THE COUNTER.

We expressed strong doubts last week as to the accuracy of the report cabled across from Philadelphia through Dalziels' agency (and which, by the way, is usually reliable enough), in which Messrs. Reixach and Watson, of Lister and Co. Ltd., were credited with utterances which, if made at all, would have speedily raised a hornet's nest about their ears. But with all our knowledge of American newspaper mendacity we scarcely dreamt that an entirely bogus interview had been invented as a basis for the statements cabled here. But it seems that such indeed was the case, for Messrs. Reixach and Watson, who have now returned home, say they were never interviewed at all, and that the statement was probably made in the interest of the Republicans to shew what effect the McKinley Tariff was having upon English traders in inducing them to bring capital into America. But while denying the assertions credited to them, Messrs. Reixach and Watson admit that their business in America was that of enquiry, and upon their investigations they will base their report to the company. There is a good supply of labour in the United States, and wages are not likely to rise, owing to the influx of emigrants. With low wages and high protection in their favour, what is to prevent the American manufacturer from driving us entirely out of the home market, and of assailing our position abroad? There is no likelihood, Messrs. Reixach and Watson distinctly assert, of any tariff reduction such as that hoped for by infatuated and impractical theorists here, and they further state that English capital will be taken to the States, and businesses started there.

THE SILK INDUSTRY OF CALABRIA AND SICILY.

A writer in the *Handels-Archiv* furnishes some particulars regarding silk culture, etc., in Calabria (South Italy) and Sicily. During the past four years the production of cocoons in those regions has increased considerably, and mulberry trees are now no longer felled in order that vines may be planted in their stead, as was the case some time ago. The cocoon harvest of 1889 proved rather unfavourable both in Italy and Sicily, but that of the present year has turned out well both as regards quantity and quality. The silk produced in the provinces of Messina and Reggio-Calabria is known in the trade under the name of Messina silk. The province of Messina has 10 reeling establishments, with 552 basins. In the province of Reggio-Calabria there are in the commune of Reggio 3 establishments, with 164 basins; the commune of Villa San Giovanni has 24, with 1,028 basins; the commune of Campo 3, with 84 basins; and the commune of Cannitello 6, with 88 basins. The total in the two provinces amounts to 46, with 1,916 basins. Out of the basins the cocoons are spun upon the reels by girls or women. Each pair of these basins has another basin connected with it in which special workers beat the cocoons with a small brush in hot water until the first layer, which cannot be reeled, has been removed, and the pure thread fit for reeling sticks to the brush. The cocoons after having been prepared in this manner are then distributed to the reelers. An establishment of 50 reeling basins therefore needs 25 more basins for this preparatory process. Few of the spinning establishments work continuously through the whole year. Most close for a few months before the new harvest, the hands occupying themselves during the interval with the breeding of cocoons. The small works confine their operations to the months of summer and harvest. Other causes of interruption are religious festivals and pauses for repairs. The number of persons in these districts occupied in the reeling of raw silk is estimated at 4,830 females and 190 males, engaged for about 170 days in the year, of whom 1,446 belong to the province of Messina and 3,574 to the province of Reggio. To these must be added 380 persons engaged as extra hands for 60 days for the reception of the cocoons. As the silk industry employs also a considerable number of packers, carriers, buyers, and others, it brings in to the working classes of these provinces a large proportion of their earnings. Messina silk has recently been introduced into Germany, and it is to some extent known and appreciated in Vienna.

"BLACK GAME."

The close season is over in the United States for black game, and the sporting season has commenced. Any pretext will serve for shooting down the negro, and during the next four months we shall have reports, mainly from the cotton states, of bags of various dimensions being made. The first is already to hand. On Monday last *The Times* contained the following telegram:—

Atlanta (Georgia), November 1st.

A negro who had been arrested here for assaulting women was forcibly taken from the custody of the police by an infuriated crowd, who carried him off to a neighbouring wood and riddled him with bullets.

We carefully watched the press last season for reports of any punishment that might have been meted out to the shooters of negroes, but of course we watched in vain: none was ever inflicted. It is a principle of English law, and we have understood that it had been incorporated into that of the States, that a person must be held to be innocent until proved guilty. But if so it is certainly not practised, unless we assume—as we fear there is every occasion to do—that the negro is not yet regarded as a human being in the United States. We also fear that the charges commonly brought against negroes are manufactured in most cases entirely to afford excuses for the indulgence of the racial hatred which so widely prevails in the South against this unhappy people. No wonder there is a wide-spread desire amongst the negroes to leave this Egypt of their race. It is a sentiment of which the Powers that have partitioned Africa amongst themselves ought to speedily utilise for the purpose of advancing the interests of the territories whose government they have assumed.

A fire broke out on Monday morning on the premises of Messrs. Tolson and Sons, machine makers, Dewsbury. The damage is estimated at £4,000.

Articles.

EUROPE AND PROTECTION: THE NEW FRENCH TARIFF.

Elsewhere we give the first instalment of the proposed new tariff, which is now under the consideration of the French Government. The Tariff Committee met on Tuesday to discuss the matter, and numerous objections and ambiguities in the scheme were dwelt upon by MM. Léon Say, Felix Faure, Peytral, and others. It was urged that the tariffs would be constantly liable to Parliamentary alterations—that the maximum tariff was so high that it would provoke reprisals. It was also urged that while professedly abolishing treaties the scheme virtually continued them by authorising negotiations for reciprocity subject to Parliamentary sanction. The scheme was defended by M. Waddington and by the chairman, the Protectionist leader, M. Méline. The latter, however, thought that if the minimum tariff was to be conceded to any nation for a fixed term it ought to be made higher, but if otherwise, it might be lowered. The minimum tariff, he argued, would ensure France the treatment of the most favoured nation in the principal markets. There was little fear of the tariffs being constantly tinkered, for Parliamentary legislation took time, and there would also be the fear that increased duties would induce other nations to withdraw their concessions. The committee will sit daily till the general discussion is over, and the Cabinet Council will press the committee to be ready for a debate in the Chamber by the end of January.

The argument is brought forward by M. Méline and his party that the conditions that prevailed at the time the present system was first elaborated no longer exist, and that the necessities of the situation call for a change such as that proposed by the measure now under consideration. The Minister of Commerce, in an *exposé des motifs*, printed and distributed amongst the deputies recently, points out that the diffusion of scientific and technical knowledge throughout the world no longer permits certain countries to consider themselves as privileged possessors of industrial monopolies which in former times they looked upon as a portion of their patrimony. A new and powerful current of enterprise throughout the civilised world has led to the creation of great manufacturing centres where formerly none existed. It is more particularly in new countries, abundantly provided with natural resources, and not burdened with the enormous fiscal and military charges that weigh so heavily on producers in Europe, that this change has manifested itself the most strikingly. The fact that these countries are rapidly passing from the position of mere consumers of manufactured goods to that of producers, is one of the most important amongst the reasons brought forward in justification of the policy of protectionists in altering their present relations with other nations by such action as that proposed in France. The policy of the greater portion of Europe of late years has been decidedly in favour of increased duties Renouncing the moderate tariff adopted in 1865 after the conclusion of treaties with France and Austria, Germany in 1879 inaugurated a system of undisguised protection. By the law of the 25th May, 1882, Austria imposed heavy taxes on a large number of articles, and five years later a still more drastic measure received the sanction of the Government

Italy, too, has moved along with the procession. Since her tariff of 1878, which was liberal enough, she has twice revised her system of duties. The treaties of commerce with France and Austria, which hampered her action in 1883 when the first of these changes was made, were denounced, and in 1888 a law of a decidedly protective character was put in force. It is unnecessary for us to detail at greater length the proceedings which have marked the course of European legislation in our time. We will only point out that Canada, the United States, Brazil, and Victoria, amongst the new countries, have adopted a similar policy, and that amongst the smaller European nations the protectionist element in the majority of instances increases in power rather than otherwise. Russia, as we have before stated, appears determined to eclipse the United States in the severity of the restrictions placed on foreign commercial intercourse.

Returning again to the French tariff, the feeling prevails amongst our neighbours that the tendency throughout almost every portion of the civilised world towards higher duties renders the concluding of new treaties of commerce practically impossible. These, therefore, are to be renounced, in order that France may have a free hand to modify the new tariff as circumstances may require. The general tariff is calculated to assure to the manufacturing interests of the country the minimum of protection admitted to be indispensable. This tariff, which will be always subject to Parliamentary modification, will be applied *ipso facto* to all nations that may not accord to France the same advantages conceded to others, or that impose on her products unreasonably high tariffs, out of all proportion to those that France in her turn imposes on the goods of the nation that may be following such a course.

What in the views of the protectionists themselves may really be considered "unreasonable" protection, we confess our inability to determine. The adoption of the new law will give rise to a good deal of diplomatic thrusting and parrying, and the conditions under which the minimum tariff is applied should enable this country to obtain special concessions if they are pressed for. While our public men run in their present groove it seems almost hopeless to anticipate that they will use the powers this country possesses to compel foreign nations to treat more fairly in this matter of tariffs. No other country in the world has such a right to expect to be treated so favourably as this, considering that we throw open an enormous market to the French without any restrictions whatever. And seeing that the proposed minimum tariff shews an increase on the present conventional tariff, should we not begin to make our power felt at once? What right has France to further increase tariff barriers against us, while she still enjoys here those privileges that unrestricted free trade grants to the foreigner?—not always, we fear, to us. Are we to allow every foreign outlet to be gradually closed against us, simply because we do not care to lift our hand and say "Stay?" That question will be asked in no idle manner one of these days. We repeat what is stated above, that we are no longer the privileged possessors of industrial monopolies founded by our ancestors. Times have changed. Must we not change with them, or are the theories and practices of aforetime to be continued for ever, even under entirely different conditions from those that prevailed when they were first commenced? The course of commerce when governed by economic laws can be predicted; it is like a river, which always seeks natural channels and fertilises the countries through which it flows. But the course of rivers can be diverted. Trade is to England what the Nile is to Egypt, indispensable to its prosperity. Suppose the Nile were diverted into the Red Sea at Massowah, Egypt would soon become a barren, sandy desert. England without its commerce would be little better. Yet all the nations of Europe and the United States, to say nothing of our own colonies, are doing their best to divert trade from our shores. Shall we witness unconcerned and unresisting these efforts to ruin us? This is a question that ought to receive the serious consideration of our statesmen.

TEXTILE MACHINE-MAKING ESTABLISHMENTS.

INTRODUCTORY.

The eminent position that England occupies in the community of nations is universally attributed to the number and variety of her manufacturing industries, and the development of her natural resources which has followed upon their growth. Without the latter the former would have been starved, and without the former the latter would never have been required. Under the domestic systems of industries that prevailed until the middle of the 18th century, England made little progress in either population or wealth. This conclusion is strongly enforced by the teachings of history, as will easily be discovered by a brief glance at the leading facts relating to population and means of subsistence.

The reliable history of England commences with the advent of the Romans, who made their first visit under the leadership of Julius Ceasar, 55 years before the commencement of the present era. This was only a temporary visit, as the masters of the world allowed about 90 years to elapse after that before they seriously commenced the conquest of the island, which they achieved in A.D. 46. The story of their occupancy is well known. They finally retired in the year 420, after having conferred many benefits upon the people by the institution of orderly government, the repression of the warlike sentiments of the different tribes, and the encouragement of pastoral and agricultural pursuits. The best estimates available give the population of the country during the rule of the Romans at 760,000. Their government was succeeded by a period of contention lasting about 150 years, and out of this emerged the Saxon Heptarchy, which endured until the year 827, when the various states of which it was composed were united into one kingdom. The rule of the Saxon Kings lasted about 240 years, or until the advent of the Normans in 1066. At the close of the Anglo-Saxon period the population is estimated to have been 1,800,000, or an increase of a million in 636 years. Slower progress than this could hardly have been made. Of these, two-thirds, most probably the descendants of the Britons, lived in different degrees of slavery. Another long step may next be taken to 1603, the year in which Queen Elizabeth died. At this date careful estimates give the population of England at between 4,000,000 and 5,000,000. The advance from the former to these figures required the long period of 537 years. Looked at from the standpoint of the present day, and contrasted with the rate of progress that has been maintained for a century, these are strange facts, but the strangest of all is that the country was regarded in Elizabeth's later years as being over-populated with this number of people. Great inconvenience began to be felt from the vast number of idle persons and those who could not obtain employment. London and its suburbs, with a population of about 530,000, could neither be governed nor fed with efficiency, and laws were passed to restrain its growth. The insufficient food and the unwholesome modes of living led to the outbreak of the Great Plague, the ravages of which so checked the increase of the people, that at the Revolution of 1688, when an estimate of the population of England and Wales was made, based upon the returns of inhabited houses assessed to the Hearth-tax, it was only 5,500,000. Gregory King, who made this estimate, also classified the population, and very elaborately worked out the incomes of the families of each class. These figures would astonish those persons who to-day are declaiming so loudly at the hardship of a working-man's lot. The income of a working-man on which a family of 3½ persons on an average had to subsist was £15 per annum. Of this class there were 364,000 families, containing 1,275,000 persons. These, poor as they may seem to have been, were revelling in luxuries compared to the class next below them, consisting of cottagers and persons who received relief from some public source. Of these there were 400,000 families whose average income was estimated to be £6 10s. per annum; this class included a population of 1,300,000. The poor at this time had no compensation in any great cheapness of food; wheat was about 32s. per quarter, and beef about 3½ per lb., whilst potatoes and the esculent plants common to-day were luxuries confined to the tables of the rich. If Gregory King's figures were not excessive the population for the next thirty years must have steadily declined, unless the estimates made about 1800 by Finlayson were wide of the mark. This statist gives the following estimates of the population:—

1700.....	5,134,516
1710.....	5,066,337
1720.....	5,345,351
1730.....	5,687,993

These figures, which will at least be approximately correct, prove to a demonstration that there was something in the political, social, or industrial condition of the country inimical to progress. It could hardly be political, because from the time of the Norman conquest there was a steady, though perhaps slow growth of popular liberty and extension of popular power. Social conditions underwent amelioration in like manner, though perhaps not to the same extent. But in our industrial systems little, or only the very smallest, change was made. The distaff and spindle were only superseded by the single-thread spinning wheel in the days of Henry VIII., whilst there is no improvement in the loom recorded. Had it not been for the advent of the Huguenots, who brought with them a greater skill and the results of experience gained in another land, and who, spreading themselves over the country, infused by their example a little life into these arts, the torpor of centuries would probably have remained undisturbed. But the impetus derived from this source was soon spent, and it is not until the inauguration of the epoch of invention by John Kay, in 1733, that the beginning of the wonderful progress of the country will be discovered.

The event just mentioned ushers in a new industrial era, an era in which old things pass away. Man became endowed with a new sense, the exercise of which was destined to emancipate him from the drudgery of labour, to quicken his intellectual faculties, and ultimately, we hope, to provide him with abundant leisure in which to indulge in purer and nobler pursuits. The dawning of a brighter future begins to be visible for both

the individual and the aggregate man. This new capacity, the faculty of inventiveness, practically first became manifest in John Kay, of Bury, Lancashire. Kay's invention of a new method of throwing the shuttle through the open warp-shed by means of drag cords and a hand peg took place in 1733—not 1738 as often mistakenly stated—and was destined to so disturb the then existing conditions that their equilibrium could not be regained unless and until other progressive steps of like kind had been made. This set the ball of progress rolling, and it was not long before it received additional onward impulses from other hands. The great trouble to the weaver after the adoption of Kay's invention, as all the world knows, was the scarcity of yarn. Here was a power in his hands of which he could only partially avail himself because of the want of a corresponding power in the domain of the spinner that would enable her to keep him supplied with yarn. The demands of the weaver had been quadrupled, but so long as a spinner could only spin one thread at a time there seemed no chance of their being gratified. Could the spinner by any means be enabled to spin more than one thread at a time? A two-thread linen wheel had been invented, but it required great skill in its use, and was not a success when tried with the widely different cotton fibre. Still it was suggestive. Undoubtedly the query would be present to many minds as expressing a want very widely experienced. Hence arise rival claimants for the honour of designing and accomplishing the next great forward movement. The testimony of the times greatly preponderates in favour of James Hargreaves, of Blackburn, who combined the occupations of weaver and carpenter. Hargreaves resided near the founder of the Peel family in Blackburn, whose enormous influence upon the development of the staple industry of Lancashire will be noticed subsequently. Peel was engaged in developing his improvements in calico printing and manufacturing and had secured the services of Hargreaves in his capacity of a carpenter, which led the latter to remove from Blackburn to Oswaldtwistle—an adjoining township, in which Peel had set up his new establishment at Brookside. It was while residing there that Hargreaves in 1764, nvented the spinning jenny, the story of which will be told in another connection. Arkwright and Crompton closely followed in the footsteps of Hargreaves, and the success that attended their respective efforts stimulated invention on every hand.

It would take up an undue amount of our space were we to attempt to trace the rapid growth of our industries, the expansion of our commerce, the increase of our population, the growth of wealth, and the advance of the national influence in consequence. For these we must refer our readers to the records of the general history of the period from 1785 to the present time. There is, however, one phase of the question upon which we must dwell for a short time, and that is the influence exerted by the successful inventions made in the cotton trade. The question was speedily asked—If cotton could be spun and woven by mechanical appliances, why should not other textile materials? The inventions already referred to were therefore speedily adapted to the woollen and worsted trades with similar beneficial results and a great expansion of their productive capacity and prosperity. The flax trade followed in the early years of the present century, but in this branch the adoption of machinery was slower than in the others. It was impossible that such benefits as accrued to these industries from the revolution in their processes should not exert a mighty influence upon every other industrial or manufacturing pursuit, and the consequences are seen to-day in the fact that all have changed their procedure from manual to mechanical ones, with enormous advantages as the results.

The fathers of textile invention whose names we have mentioned, were most of them practical workers at their trade. This was the case with Kay of Bury, Hargreaves of Blackburn, and Crompton of Bolton; the notable exceptions were Arkwright and Cartwright, if we may properly except the former, who was following the trade of a hair-dresser and dealer in human hair, this being a considerable business. Dr. Cartwright was a clergyman: how he became interested in the matter and was led to invent the power-loom is well known. For some time after this nearly every invention emanated either from spinners or manufacturers or their workpeople. The reason of this is obvious—these classes were the only people interested; from 1765 to 1785 there were no machinists. Every spinner and manufacturer had himself to make all the machinery he required. The smithy and the carpenters' shops were important adjuncts to the mill. The machines were small, and the frames were mostly made of wood, whilst the working parts and minor details were of wrought iron. Important parts of the engine and gearing were also of timber. The greater suitability of iron-work, however, became evident, and led to the gradual displacement of wood. The new industry was now arriving at a point at which it was destined to give birth to another—that of machine making. The man who made the best machines for himself would be, and was, naturally engaged to make for others. The iron-founding and mechanics' shops connected with the best mills by these demands grew larger, until at last the flow of business in machine making became so large as to justify their detachment from their parent and their conduct on an independent basis.

The new craft of the mechanic was a purely manual one, requiring skill, strength, and persistent hard labour. The hammer, the chisel, and the file were the chief tools with which he equipped himself, hence excellence was only very slowly attained. But the leaven of the new ideas was at work, and very soon it was recognised that it was quite as feasible to call in the aid of machinery to make machines as it was to spin and weave cotton. The machine maker at once began to construct machine tools to aid himself in his work. Out of this has been evolved a third industry—that of the machine tool maker. Mechanical engineering was a twin industry with that of machine making, being born of the same circumstances.

We have thus briefly traced the genesis and growth of the machine-making industries from their parentage in the new textile trades. They are the children of invention, and contribute to the public welfare in a degree far beyond that with which they are usually credited. To them and upon them the textile industries look and rely for every improvement they desire and their reliance is not in vain. It is in Lancashire they have originated and had their greatest development, and we think we are justified in believing that a few sketches of the history of the most interesting and important establishments will not prove unacceptable to our readers.

The dividend of Messrs. Asa Lees and Company, Limited, machinists, Oldham, for the half-year is at the rate of 15 per cent. per annum.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, OCT. 25TH.

Further re-appraisements of value have been made by the committee appointed to carry out the provisions of the Administrative Bill. *Not a single firm amongst the last list published is British or Irish.* This is surely a most significant fact, proving as it does up to the hilt the statements so frequently made by the *Mercury* that it has been the German and French manufacturers who have been principally guilty of systematic undervaluation. The following are the principal changes made:—

Silk and cotton tie-silk, Othello, Ce., 50 C-M., P. 16,325, sample No. 520, from Jarronson and Laval, Lyons, advanced from francs 4·25 per aune to francs 4·65. Total average advance, 9·6 per cent.

Silk and cotton velvets, sample No. 449, from Johs. Girnies and Co., Crefeld—total average advance, 7·01 per cent.

Silk and cotton velvets, sample No. 451, from Johs. Girnies and Co., Crefeld, 14½ to 15 inch, coloured, quality A1, advanced from marks 1·08 per metre to marks 1·15—total average advance, 7·1 per cent.

Silk and cotton velvets, sample No. 501, from Johs. Girnies and Co., Crefeld—total average advance, 7·1 per cent.

Silk and cotton velvets for hats and bonnets, sample No. 495, from J. L. de Ball and Co., Graslitz—total average advance, 7·8 per cent.

Silk and cotton velvets for hats and bonnets, sample No. 507, from J. L. de Ball and Co., Lobberich—total average advance, 4·5 per cent.

Silk and cotton satins, sample No. 499, from Stunzi Sohne, Horgen—total average advance, 4·8 per cent.

Silk and cotton plush, sample No. 502, from B. E. Kerstiens and Co., Crefeld—total average advance, 8·1 per cent.

Silk and cotton plush, sample No. 509, from Christian Mengen, Viersen—total average advance, 6·6 per cent.

Worsted dress goods, sample No. 512, from Louis Cordarnier, Roubaix—total average advance, 8·3 per cent.

Coloured and bleached cottons, sample No. 518, from Megroz, Portier and Co., Paris—total average advance, 20·5 per cent.

Silk and cotton millinery trimmings, sample No. 522, from Reed, Schellecker and Co., Crefeld—total average advance, 9·4 per cent.

Silk and cotton velvets, sample No. 16-11, from F. W. Botschen, Konigswald—total average advance, 9·9 per cent. The same sample No. 15-10—total average advance, 11·5 per cent.

Silk and cotton serge, 60 C-M.—advanced from francs 1·10 per aune to francs 1·20. Total average advance, 12 per cent.

Cotton damask, sample No. 384-54, from G. Marburg, Freudenthal—total average advance, 10·9 per cent.

Silk and cotton lavallieres jap-umpl., sample No. 441-57, from Dreyfuss Frères and Treweles, Lyons—advanced from francs 4 per dozen to francs 4·50. Total average advance, 12·3 per cent.

Silk and cotton japurais, 61 C-M., sample No. 484-65, from Dreyfuss Frères and Treweles, Lyons—advanced from francs 1·52 per metre to francs 1·70. Total average advance, 11·8 per cent.

It is becoming increasingly evident even to the more intelligent of the Republicans themselves that a tactical blunder, if nothing worse, was made in bringing forward the McKinley Bill so close to the elections. The "Grand Old Party," as it is termed, will certainly suffer severely during the approaching campaign, but owing to the fluctuating character of the tide of American politics it is impossible to say how long the Democrats will retain ascendancy. European manufacturers should remember that if the defeated party should convince the electors that the Democratic legislation will, in the

slightest degree, benefit Europe, the people would again rally round the old party. This country will remain protectionist no matter who gets into power, and the sooner Englishmen recognise the fact the better.

An English metallic bed manufacturing company, recently located in Connecticut, having been sued for employing foreign workmen under contract, will fight the case on the ground that it was unavoidable. No workmen familiar with the work could be found on this side of the Atlantic and it will be argued that it is foreign to the spirit of our laws to discourage the opening of a new industry in this country by shutting out workmen who are indispensable in its establishment.

The linen mill at Minneapolis will apparently become an assured fact. A considerable amount of scepticism has prevailed for some time as to the ability of those interested in the scheme to push it on to a successful issue. Mr. Allan, who is spoken of as a "Belfast manufacturer," will now have an opportunity of shewing the kind of stuff he is made of.

It is reported from Askabad in Russia that several agents have arrived in Usumada from the factories of Roubaix and Tourcoing for the purpose of studying the conditions of sheep-breeding and the production of wool in the Transcaspian countries, Bokhara, Afghanistan, and Turkestan. Their object is to promote the direct exportation of the wool to France.

In a report on the trade of Yokohama it is said that raw cotton can be imported into Japan from Bombay and spun into yarn that competes successfully with the Bombay spinnings, and American cotton has been also imported, which, mixed with China cotton, is expected to produce a quality of yarn better than that turned out at present by the local mills.

A meeting of French woollen and worsted spinners and manufacturers, held in Fourmies, has decided to co-operate with the spinners and manufacturers of other centres of the industry in France in bringing about an important curtailment of production in consequence of the unsatisfactory position of the trade. A conference of representatives from all the French centres of the industry is to be held at an early date to settle the details.

German Exports to America.—The Berlin correspondent of the *Daily News* telegraphs:—A commercial paper here records the fact that up to the present exports to the United States are not affected by the McKinley tariff, and shew no decrease. On the contrary, there has been during the last week no fewer than 43 representatives of large American textile firms over here giving orders.

The Free-traders of France have met the Protectionist tendency of the new tariff by the formation of a league for the protection of French export trade and national labour. Their first object is, if possible, to secure freedom from duty for wools, silks, and oils. The chairman of the Lyons Chamber of Commerce—it may be noted as satisfactory and significant—heads the movement, and support is said to be forthcoming from many quarters where Protectionism had been supposed to reign without a rival.

The Saxon Machine Works (Hartmann), of Chemnitz, has turned over to the amount of £565,537 during the past year, as compared with £463,641 for 1889, and realised a net profit of £74,616 as against £58,301. The increased profit must be attributed to a larger turnover, which has over-ridden the higher wages and prices of raw material. The dividend proposed is 11 per cent. against 10 per cent. for last year. As orders in hand on October 1st amounted to £270,402, a good business seems already secured for the current business year, and as prices of raw material are falling, the directors look forward hopefully.

Austrian Textile Trades.—The Vienna correspondent of the *Daily Chronicle* telegraphs:—"A congress of men employed in the Austrian textile trades has just been held at Brunn, at which the unsatisfactory condition of the workpeople, and the advisability of discovering a means for establishing an organisation to embrace the whole empire, formed the subject of discussion. The Congress unanimously passed resolutions to the effect that piece-work should be abolished and a fixed rate of wages introduced with an eight-hour day. It was further decided that women and unskilled hands should be allowed to join the Union. To the Executive of the Union would be delegated the duty of deciding as to when strikes should take place, of mediating between employers and employed, and of keeping statistics relating to the trade."

Tariff News.

THE NEW FRENCH TARIFF.

I.—PROPOSED DUTIES ON LINEN AND JUTE GOODS.

	Tariff general. fr. c.	Tariff minimum. fr. c.
Linen or Hemp Yarn.		
Single: Unbleached of 2,000 metres or less, in Hanks, the 100 kilogrammes,	20 80	16 00
From 2,000 to 5,000 do.	23 40	18 00
„ 5,000 to 10,000 „	29 90	23 00
„ 10,000 to 20,000 „	42 90	33 00
„ 20,000 to 30,000 „	52 00	40 00
„ 30,000 to 40,000 „	65 00	50 00
„ 40,000 to 60,000 „	91 00	70 00
„ 60,000 to 80,000 „	128 70	99 00
„ 80,000 to 100,000 „	193 70	149 00
Above 100,000 „	260 00	200 00
Single Yarn done up in hanks or otherwise,	Duties increased by 32 per cent. on the general tariff, and 25 per cent. on the minimum.	
Bleached or Dyed, of 2,000 metres or less, the 100 kilogrammes	27 00	20 80
From 2,000 to 5,000 do.	30 40	23 40
„ 5,000 to 10,000 „	38 85	29 90
„ 10,000 to 20,000 „	55 75	42 90
„ 20,000 to 30,000 „	67 60	52 00
„ 30,000 to 40,000 „	84 50	65 00
„ 40,000 to 60,000 „	118 30	91 00
„ 60,000 to 80,000 „	167 30	128 70
„ 80,000 to 100,000 „	251 80	193 70
Above 100,000 „	338 00	260 00
Done up in balls or otherwise.	Duties increased by 26 per cent. on the general tariff, and 20 per cent. on the minimum.	
Twisted Yarn: Unbleached, 2,000 metres or less to the kilogramme	27 00	20 80
From 2,000 to 5,000 do.	30 40	23 40
„ 5,000 to 10,000 „	38 85	29 90
„ 10,000 to 20,000 „	55 75	42 90
„ 20,000 to 30,000 „	67 60	52 00
„ 30,000 to 40,000 „	84 50	65 00
„ 49,000 to 60,000 „	118 30	91 00
„ 60,000 to 80,000 „	167 30	128 70
„ 80,000 to 100,000 „	251 80	193 70
Above 100,000 „	338 00	260 00
Done up in balls or otherwise	Duties increased by 26 per cent. on the general tariff, and 20 per cent. on the minimum.	
Twisted Yarns, Bleached or Dyed, 2,000 metres or less to the kilogramme	35 15	27 05
From 3,000 to 5,000 do.	39 55	30 40
„ 5,000 to 10,000 „	50 50	38 90
„ 10,000 to 20,000 „	72 50	55 75
„ 20,000 to 30,000 „	87 88	67 60
„ 30,000 to 40,000 „	109 85	84 50
„ 40,000 to 60,000 „	153 80	118 30
„ 60,000 to 80,000 „	217 50	167 30
„ 80,000 to 100,000 „	327 35	251 81
Above 100,000 „	439 40	338 00
Done up in balls or otherwise	Duties increased by 26 per cent. on the general tariff, and 20 per cent. on the minimum.	
Linen and hemp yarns mixed with other material will pay as yarns of pure flax and hemp, provided the flax or hemp predominates in weight.		
Jute Yarns.		
Unbleached, less than 2,500 metres per 100 kilogrammes	9 75	7 50
From 2,001 to 4,000 do.	12 80	9 50
„ 4,001 to 6,000 „	15 60	12 00
„ 6,001 to 10,000 „	20 80	16 00
Above 10,000 „	24 05	18 50
Done up in balls or otherwise	Duties increased by 26 per cent. on the general tariff, and 20 per cent. on the minimum.	
Bleached or Dyed, less than 2,000 metres per 100 kilogrammes	13 65	10 50
From 2,001 to 4,000 do.	16 25	12 50
„ 4,001 to 6,000 „	19 50	15 00
„ 6,001 to 10,000 „	24 70	19 00
Above 10,000 „	27 95	21 50
Done up in balls or otherwise	Duties increased by 26 per cent. on the general tariff, and 20 per cent. on the minimum.	
Twisted Yarns — Unbleached, bleached, or dyed	Duties same as on single yarns, increased by 39 per cent. on the general tariff and 39 per cent. on the minimum.	
If done up in balls or otherwise	Duties same as in corresponding class increased by 26 per cent. on the general tariff and 20 per cent. on the minimum.	

Jute yarns mixed with other material will pay as yarns of pure jute, provided that the jute predominates in weight.

New Zealand Flax, or mixed with other vegetable fibres in which New Zealand flax predominates (unbleached) in weight the 100 kilogrammes	15 00	12 00
Ditto, bleached	19 50	15 00
Twines or Glazed Yarns, single twist, unbleached, 200 metres per 100 kilogrammes	19 50	15 00
From 200 to 500 do.	26 00	20 00
„ 500 to 1,000 „	32 50	25 00
„ 1,000 to 2,000 „	39 00	30 00
„ 2,000 to 4,000 „	45 50	35 00
Above 4,000	58 50	45 00

Note.—If done up in balls the duties increased by 25 per cent. on the present tariff and 20 per cent. on the minimum.

Ditto—Bleached or dyed.—These duties are increased by 39 per cent. on the general tariff, and 30 per cent. on the minimum.

If done up in balls, an addition of 32 per cent. on the general tariff and 25 per cent. on the minimum.

Cordages or yarns, double twist, and cables, glazed or unglazed, tarred or untarred, having a diameter of 10 millimetres or less.	Same duties as on unbleached twines, increased by 45 per cent. on the general tariff and 30 per cent. on the minimum	
Do., bleached or dyed	Same duties as on cordages, increased by 39 per cent. on the general tariff and 30 per cent. on the minimum.	
Do., more than 10 millimetres the 100 kilogrammes	26 00	20 00
Do., do., bleached or dyed	33 80	26 00
Tissues of Linen and Hemp.		
Plain Linens and Diapers, having in warp and woof in the space of 5 square millimetres, after division by 2, 6 threads and under, and weighing 40 kilos. to the 100 square metres—100 kilos.	31 20	24 00
7 and 8 threads,	33 00	30 00
9 and 10 „	58 50	45 00
11 and 12 „	71 50	55 00
More than 12 threads,	91 00	70 00
Goods weighing from 15 to 40 kilos. and having 6 threads and under,	58 50	45 00
7 and 8 threads,	71 50	55 00
9 and 10 threads,	104 00	80 00
11 and 12 threads,	130 00	100 00
13 and 14 threads,	162 50	125 00
15, 16, and 17 threads,	182 50	140 00
18, 19, and 20 threads,	286 00	220 00
21, 22, and 23 threads,	330 00	300 00
Above 23 threads,	520 00	400 00
Weighing 15 kilogrammes and under, and having 14 threads and under,	195 00	150 00
15, 16, and 17 threads,	234 00	180 00
16, 19, and 20 threads,	361 00	280 00
21, 22, and 23 threads,	520 00	400 00
More than 23 threads,	650 00	500 00
Bleached,	Same as unbleached according to class, increased by 39 p.c. for general, and 30 p.c. for minimum tariff.	
Printed, Dyed, and Finished,	Same as undyed, increased by 20 per 100 on the general tariff, and 15 per cent. on the minimum tariff.	
Oilcloth, per 100 kilogrammes	39 00	30 00
Damask for bedding and furniture, unbleached	145 00	112 00
Cream-coloured, bleached or mixed with white or dyed threads	189 28	145 60
Table damask, unbleached, and having in square of 5 millimetres at least 12 threads	121 00	93 00
13 and 14 threads	167 70	129 00
15, 16, and 17 threads	214 50	165 00
18, 19, and 20 threads	344 50	265 00
21, 22, and 23 threads	513 50	395 00
More than 23 threads	689 00	530 00
Clouded, Bleached, or Mixed with white threads or dyed	Duty on unbleached increased 39 per cent. for the general and 30 per cent for minimum tariff.	
Unbleached Ticking	156 00	120 00
Ticking, cream-coloured, white or mixed, with unbleached threads or white or dyed threads	202 80	156 00
Passementerie and Tape, unbleached, drab or grassed	183 70	149 00
Do. do., cream-coloured, bleached or dyed	226 20	174 00

	Frs.	Cts.	Frs.	Cts.
Hosiery	161	20	124	00
Lace and Guipure	Same as cotton.			
Handkerchiefs, embroidered, and other Linen Embroideries	Same as other embroidery goods.			
Jute Tissues—	Gen. Tariff.		Min.	
Unbleached, and having in the warp and weft in the space of 5 square centimetres after division of the total by two up to 15 threads, 100 kilos.	19	50	15	00
Having from 16 to 25 threads	24	70	19	00
Having from 26 to 35 threads	31	20	24	00
Having from 36 to 45 threads	41	60	32	00
Having more than 45 threads	48	10	37	00
The same, but Bleached or Dyed	The same duties as per unbleached tissues, increased by 7 fr. 80c. per 100 kilos. for the general tariff, and by 6 fr. per 100 kilos. for the minimum tariff.			
Prints	Do.			
Mixed materials in which the jute predominates in weight	Same duties as for tissues of pure jute.			
Jute Sacks	The duties on jute tissues increased by 13 per cent. for tariff general and 10 per cent. for the minimum tariff.			
Reeled Jute, per 100 kilogrammes	21	45	16	50
Jute Rove for shoes	26	00	20	00
Jute Carpets, short or long nap, unbleached	26	00	20	00
Jute Carpets, short or long nap, bleached or dyed	33	80	26	00
Jute Carpets, short or long nap, printed	41	60	32	00
Velvet and Druggetino for furniture, unbleached	84	50	60	00
Velvet and Druggetino for furniture, bleached, dyed, or printed	104	00	80	00

(To be continued.)

As one of the first results of the passage of the McKinley Tariff Bill the prospectus is issued in New York by Messrs. August Belmont & Co. and Messrs. Vermilye & Co., of the National Cordage Company, formed for the importation of hemp and the manufacture and sale of cordage. It is proposed to own and control fifteen of the principal manufacturing concerns in the country, the parent Company furnishing the raw material and the factories being under contract for long terms to manufacture the goods. The common stock is $15,000,000.

Designing.

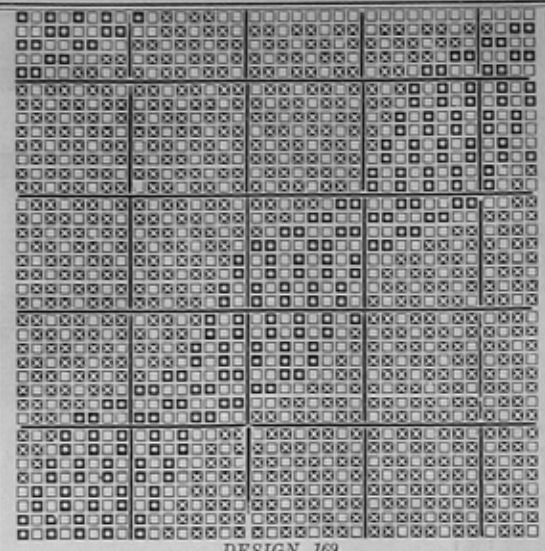
NEW DESIGNS.

FIGURED DRESS OR MANTLE CLOTHS.

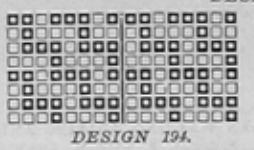
Design 193, given in last week's issue, shall first claim attention. The idea is to develop indefinitely the ground figure of the fabric by means of weave, and then over this to introduce a more pronounced figure developed in extra material—either silk, mohair, or some lustrous material. Further, this more pronounced figure should be made to stand out from the ground cloth as much as possible, which is accomplished by allowing the extra figuring weft to float rather a long way, though this must, of course, be limited by the sett. This may also be further insured by selecting material for the figuring weft, which will not shrink as much as the ground materials, though great care is necessary here, since this property often results in much trouble in the finishing, pieces sometimes being completely spoilt from carelessness. The weave for the ground figure which we have inserted is a fine upright-twill effect, while the ground of the fabric is composed of a 6-and-2 twill, which, in a fairly fine sett, will give sufficient character and boldness to the ground, at the same time contrasting quite powerfully enough with the upright twill in the ground figure. The following sett will be found suitable for a fairly light mantle cloth :—

Warp.	*Weft.*
2/40's worsted	20's worsted
19's reed 4's.	76 ground picks per inch.

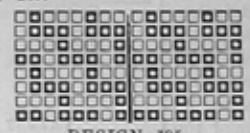
All black, both warp and wefts, will prove very effective. Another effective system of development will be to use a fairly lustrous worsted ground and develop the extra figure with dull, non-lustrous woollen yarn, or better still with a slightly twisted condensed yarn.



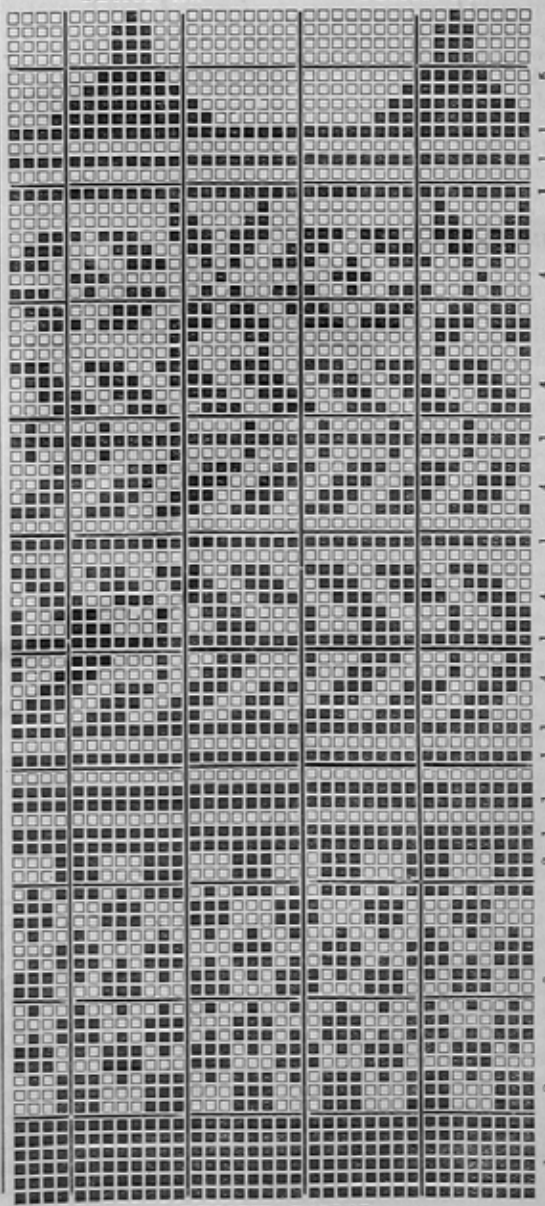
DESIGN 169.



DESIGN 194.



DESIGN 195.



DHOOTIE BORDER.

Again, if a brighter cloth is required, a good effect may be obtained by shading the warp for the ground texture with black, grey, and white, and inserting black or white lustre yarns for the extra figure or a neutral green grey ; yellow or red grey will prove very effective. Mixture yarns may also be used with good effect.

Another system of developing this effect is demonstrated in *Designs 194* and *195*, which is often found in silks, etc., though but rarely, save in a modified form, in worsteds. It will be observed that the two designs are simply double plains, but the warping and wefting are what cause the modification here. The warp should be all white or solid colour, and then the piece should be wefted, 1 pick, say, grey, and 1 pick black. Now if it is desirable to form the ground texture black and the ground figure grey, the grey is sent to the back, save where the ground figure comes, when the black and grey weft change places. On referring to *Design 194* it will be observed that if the weft be 1 pick grey, 1 pick black, 1 pick grey, 1 pick black, etc., then the grey will go to the back and the black form the ground in the first design, whereas in the second these positions will be reversed, the grey coming to the surface and the black going underneath.

The designer has thus at command an effective and novel method of shading, which may be rendered still more complete by warping one-and-one similar to the wefting.

This method, we are confident, will answer exceedingly well in mantle cloths even with the coarser yarns, and in dress cloths with finer yarns.

An idea for a novel effect is given in *Design 196*, a fancy twill of an irregular form being here produced by means of a combination of 2-and-1 twill as ground and 2-and-2 warp and weft rib for the broad twill effect. The following sett is suitable for light dress materials :—

Warp.	*Weft.*
30's white worsted.	30's white worsted.
16 reed 4's.	60 picks per inch.

Marks in this case must be taken to mean warp. Very effective cloths possessing twill characteristics similar to this may be made with cotton warp and worsted or woollen weft, but, of course, suitable weft-face weaves must be used.

In making fancy dress goods *Design 196* may prove very useful as a figured ground. It may also prove useful for worsted coatings in a modified form.

DHOOTIE BORDER.

This design is an Indian Dhootie border. These cloths vary from 22 to 50 inches in width, and in the length from 2 yards the smaller, to 4½ and 5 yards the larger. The figures at the bottom of the design are given as a guide to the colouring material. The entire ground, or all the light type, is cream or yellow white ; No. 1 : a grass green, but very light ; 2 : chocolate ; 3 : a light purple ; 4 : bright red ; 5, Kutar edge : blue. The centre is grey or unbleached, 40's warp and weft ; 40 ends and 40 picks per inch.

The colours may be arranged in many other ways, but not to any great extent. A sample which we have seen from Bombay has a coral ground (or wherever the light type occurs in this design) ; No. 1 would still remain green, but of a darker shade ; No. 2 blue ; No. 3 a dark purple ; No. 4 dark maroon, and No 5, the Kutar edge, dark lilac.

Machinery and Appliances.

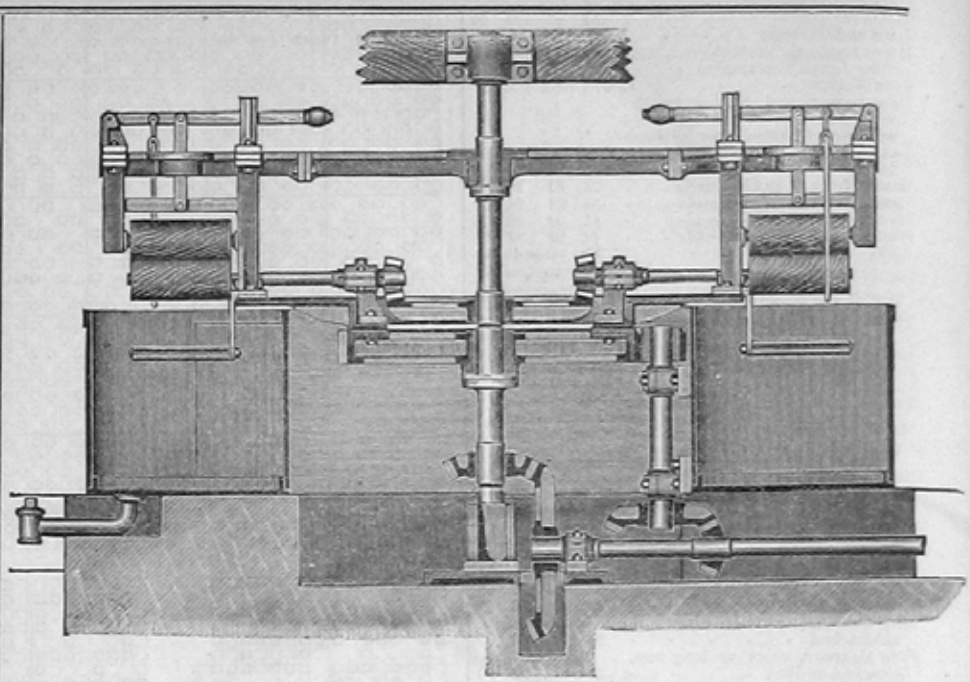
PATENT IMPROVED YARN SOAPING, BLUEING, AND FINISHING MACHINE.

MESSRS. J. AND E. ARNFIELD, GLOBE IRON WORKS, NEW MILLS, NEAR STOCKPORT.

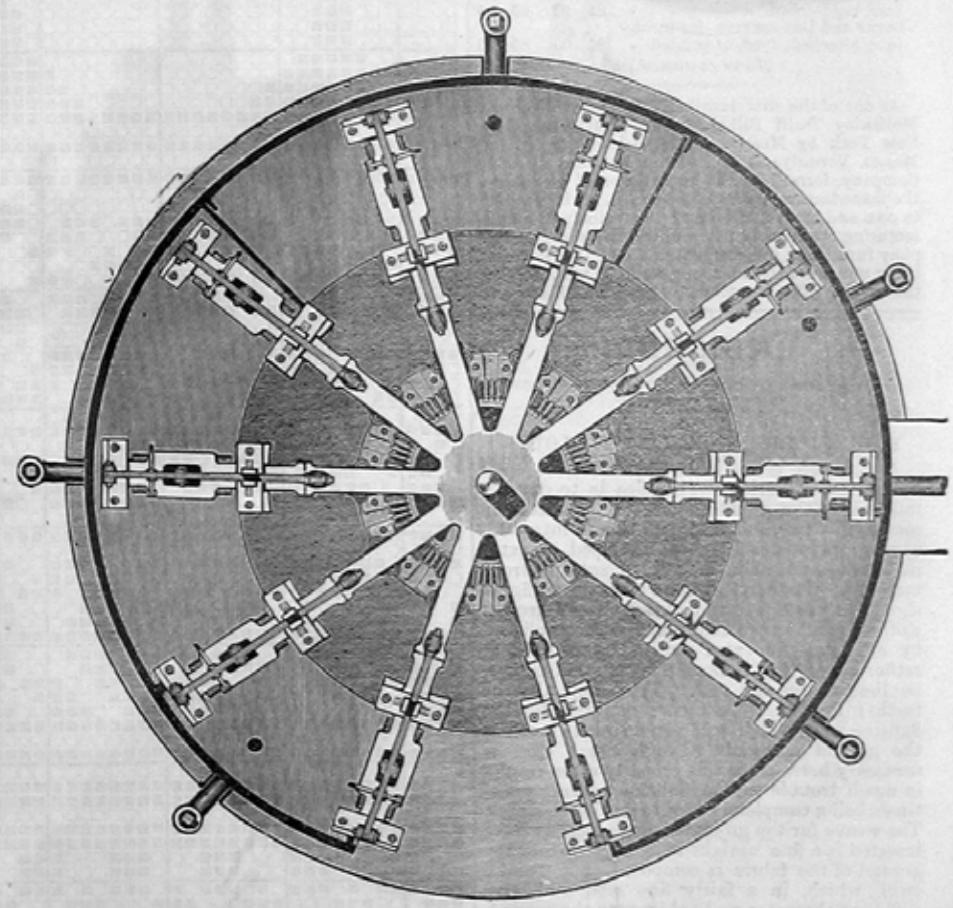
Few persons not directly connected with them have any adequate conception of the great number of processes there are included in each and every one of the textile industries. Even many people who are engaged therein and perfectly conversant with their own division of one section have only a very imperfect notion of others, and really may be said to have none at all of those in the other branches. To such it may be worth while to observe that each of the textile trades may be divided into three great sections: spinning, weaving, and finishing, the latter usually including bleaching and dyeing. The two first-named are constructive, while the last adds the "finishing touches" necessary to give to the article or fabric such a presentable and attractive appearance as shall ensure its sale. Usually the finisher takes charge of the material after the manufacturer has performed his allotted duty, but sometimes he steps in between the spinner and manufacturer, which is the case when he bleaches, dyes, or otherwise prepares yarns for the use of the manufacturer subsequently.

It would be superfluous to do more than remark that all the sections we have mentioned are subdivided into many processes, varying according to the nature of the article dealt with and the purpose for which it is intended. Take, for instance, the bleaching of cotton goods: there is the first washing process, the purpose of which is to remove all foreign elements that may have been introduced to facilitate the processes of manufacturing, and further to dissolve and remove the natural wax that coats the cotton fibre, which, were it allowed to remain, would to a great extent prevent the chloride of lime exerting its decolourising action upon the cotton. The first washing having been properly performed, the bleaching stage is the next great process, in which the material is submitted to a bath formed of a solution of chloride of lime and water of carefully regulated strength. This quickly performs its work, and the material has next to be removed from the bleaching kier to be again washed, in order to free it from any surplus or unspent chloride, which is accomplished in a cold water bath. Then follows the soaping process—a passage through a bath of hot soap and water. This is a preparation for the tinting, which is usually a very faint blueing, obtained by passing the material through a bath of water in which a little indigo or aniline blue has been dissolved. The cleansed cotton fibre has a strong affinity for colouring matter. This passage is followed by another wash in hot water, and a final one in cold. After each and every one there must be a wringing and a squeezing, so that the material shall enter each in the best condition for effective treatment.

We have thus briefly described the passages in the bleaching process to shew what a great amount of handling would be necessary were machinery not substituted. This, however, has been done to a considerable extent in treating both cloth and yarn. The yarn-finishing section of the business, however, has until recently been perhaps the most backward one, as is evidenced by the fact that the use of the stocks has been retained—necessarily so—to the present day, though for years it has been the aim and constant study of practical men in this department to discover some means or process of soaping and finishing yarn that would supersede them. Nevertheless, until within the past year little success has attended these efforts. A recent invention, however, by Mr. G. W. Liddiard, a practical yarn bleacher and finisher, which has been further advanced by a patented improvement of the makers, Messrs. J. and E. Arnfield, of the Globe Iron Works, New Mills, has done much to bring yarn bleaching into line with calico bleaching in its mechanical aspects.



PATENT YARN WASHING, SOAPING AND FINISHING MACHINE: SECTIONAL ELEVATION.
MESSRS. J. AND E. ARNFIELD, NEW MILLS, NEAR STOCKPORT.



PATENT YARN WASHING, SOAPING AND FINISHING MACHINE: PLAN.
MESSRS. J. AND E. ARNFIELD, NEW MILLS, NEAR STOCKPORT.

The accompanying illustrations represent a vertical section and plan view of the patent improved yarn washing, soaping, tinting, and finishing machine. It consists essentially of an annular cistern or tank divided into a number of compartments, each representing an in-

dependent vat. Provision is made for heating the contents of these vats by steam to any degree up to boiling point by means of the pipes shewn. In the centre of the circle formed by the tank is a vertical shaft, driven by a horizontal shaft and bevel gearing at the bottom. Arranged on the upper part of the vertical shaft is a loose boss to which is cast a frame having ten radial arms, as will be seen in the plan, which extend over the tanks. Each arm upon its extremity carries hanging brackets, in which are fitted a pair of pressing rollers, upon the lower of which the hanks of yarn are to be placed. The top rollers of these pairs are pressed down on the lower ones by levers. The bottom rollers are keyed upon a series of radial shafts arranged horizontally, the opposite ends of which carry bevel pinions, all gearing into a large bevel wheel carried upon the central vertical shaft. By this means the bottom is positively driven, whilst the upper one, which is a compression roller, is friction-driven. A guard suspended from the lever prevents the hanks from working off the rollers; this guard is automatically moved out of the way when requisite. The brackets carrying the radial shafts are bolted to a large spur wheel, which is loose on the central vertical shaft. This wheel is drive by means of a spur pinion actuated by the horizontal driving shaft, and by these means the radial frame carrying the rollers has imparted to it a slowly-revolving motion, whilst the rollers themselves revolve rapidly, thus immersing and compressing the hanks repeatedly in each tank as they pass over it. There is a break in the ring formed by the arrangement of the tanks, which is shewn on the lower portion of the plan view, Fig. 2. The attendant takes up his position at this spot and feeds and doffs the rollers as they slowly pass in their circular traverse.

Briefly summarised, the action of the machine and the course of the process are as follows: The attendant charges the pairs of rollers in succession, each pair with hanks of yarn, the top roller having been automatically raised to admit the hank upon the lower one, after which it descends into contact again, when it commences to revolve, the revolution of the pair causing the yarn to dip into the bath. To secure its immersion with more completeness and certainty immersion rods are provided (shewn in Fig. 1), under which the hanks are passed, and these automatically draw the hanks well into the successive baths. As they approach the divisions between the tanks they are automatically lifted over. The contents of the first tank are simply clear cold water; of the second, hot soap and water; the third is the tinting or blueing bath; and the fourth and fifth, clear water again. Emerging from the last, the water is compressed from the hank by the revolution of the rollers, and the hank is doffed by the attendant, the course through the several baths having been a continuous one from the start and requiring no handling.

It will be obvious from the above description that the introduction of this machine constitutes a decided advance in the department of yarn bleaching. In the first place, the work is got through much more quickly than on the old plan, only one minute being occupied in soaping, washing, and finishing the yarn. There is a clear gain of half-an-hour upon every 100 bundles. Great economy in colour is effected, as aniline colours can be used, which results in a saving of 75 to 85 per cent. in the cost. The soap is much more effectively used, 35 per cent. of a saving being secured. With the use of the old stocks a great deal of waste is caused, especially in soft yarns such as candlewick or "bump" yarns; nearly all the breakages which cause this are avoided, and a saving of at least 90 per cent. of waste from this source is effected. In the matter of labour an important economy is obtained, one man less being required to do the work. Two years' experience shews that the hanks are finished in a manner admittedly far superior to the result attained by the use of the stocks and washing machine.

We strongly recommend every interested person to inspect the machine at work, when its principal advantages will at once become apparent. The makers will be glad to offer facilities, and also to afford every other information that may be desired. They may be addressed as above.

Bleaching, Dyeing, Printing, etc.

THE COAL-TAR COLOURING MATTERS.

(Continued from page 305.)

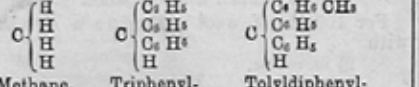
Basic Colouring Matters.

The colouring matters now proposed to be dealt with are those commonly grouped as basic colouring matters. While those previously described require a metallic mordant, such as alumina, chrome, or lead, to fix them upon the cotton fibre, the colours now to be considered require a weak acid mordant. They are derived from the class of bodies known as amines, of which aniline $C_6H_5NH_2$ and toluidine $C_6H_4CH_3NH_2$ are the most familiar examples. These undergo a kind of condensation, so that the colouring matters are rather complex in their composition. They are divisible into five groups:—

1st—The rosaniline colours,
2nd—The indulines and safranines,
3rd—Oxazines,
4th—Aniline black,
5th—Thionines.

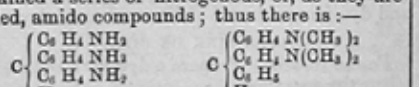
1st.—The Rosaniline Colouring Matters

These form a very important group, including among them the oldest as well as the newest of the coal-tar colours. Mostly they are derived from two hydrocarbons — triphenylmethane $C_{19}H_{16}$, and tolyldiphenylmethane $C_{20}H_{18}$; these are regarded by chemists as being derived from the simplest-known hydrocarbon—marsh gas, methane, CH_4—by substitution of three atoms of hydrogen, by phenyl in the one case and by tolyl and phenyl in the other case. This view of the composition is shewn in the formula—



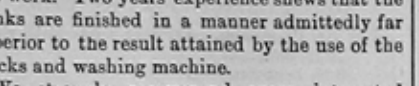
Methane. Triphenyl-methane. Tolyldiphenyl-methane.

and it is pretty generally supported by the composition and properties of the colours derived from them. The radical phenyl C_6H_5 is derived from the coal-tar hydrocarbon benzene, C_6H_6, tolyl $C_6H_4CH_3$ from toluene C_7H_8. Some of the hydrogen atoms of these radicals can be replaced by the group NH_2, and in this way are obtained a series of nitrogenous, or, as they are called, amido compounds; thus there is:—

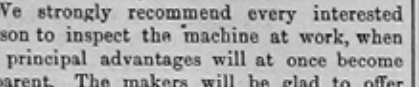


Triamido triphenylmethane (Para leucaniline). Tetramethyl diamido-triphenylmethane.

These bodies are called 'leuco-bases;' they are colourless, and when combined with acids yield colourless salts, hence the reason of their designation, 'leuco bases.' For every colouring matter belonging to the group we are now dealing with there is a leuco base, and one method of manufacturing rosaniline colours is to first prepare the leuco base. Now these bodies can by suitable means be oxidised, when they are converted into new basic compounds, which are by the action of acids converted into colouring matters. These new bodies are known as colour bases, and like the leuco bases are generally colourless, but they differ in that their salts are strongly coloured. Their relationship to the leuco bases is shewn in the formulæ:—

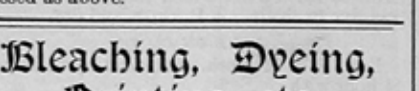


Para-leucaniline. Para-rosaniline.



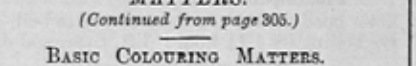
Leucaniline. Rosaniline.

The colour bases on treatment with acids form salts with elimination of water.

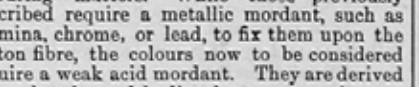


Magenta.

Hydrochloride of rosaniline is perhaps the most familiar example. Again tetramethyldiamido-triphenyl methane (see above) yields on oxidation



Tetramethyldiamide triphenyl carbinol, which by treatment with acids yields malachite green.



Besides these coloured salts these colour bases form with excess of acid almost colourless bodies, at most having a yellow colour. These acid bodies are, however, not stable; on treatment with water the original coloured salts are formed.

In this group of colouring matters red, green, blue, and violet dye-stuffs are met with. Generally they are, with the exception of the blues, soluble in water; acids change the colour of this solution to yellow, but on diluting with water the original colour comes back again; caustic soda decolourises their aqueous solutions, precipitating the colour base as a colourless precipitate; on neutralising with acids the original colour is restored; on treatment with zinc dust the solutions are decolourised, the leuco bases being formed; on exposure to air of the solutions of these 'leuco bases' the colour is restored in many cases.

They unite with the fibres in the form of salts, not as bases, which is shewn by the fact that colourless solutions of rosaniline will dye wool red, the colour base having evidently combined with the acid of the wool to form a coloured salt. Again, the acid of these dyes remains in the dye-bath after using, which also points to the same conclusions as the last fact. They will not dye from acid solutions, and require therefore a neutral bath, or at most one very feebly acidulated.

Some acids, *e.g.*, tannic, pieric, some of the azo colours, precipitate these colouring matters from their solutions in the form of lakes which are soluble in alcohol, acetic acid, etc. By treatment with sulphuric acid they are converted into sulphonic acids, which dye wool and silk in acid baths, but which will not dye cotton very satisfactorily.

(To be continued.)

For dyeing black on cotton Kertesz proposes to first dye with diamine black, and then to top with aniline black.

The Diamond Black of Messrs. Bayer and Co. is an amido-dye-stuff produced by combining tetrazo-diphenyl with amido-napthol sulphonic acid obtained from the napthylamine disulphonic acid by melting with caustic soda. It has been found that it is capable of undergoing diazotisation and then forming with phenols, amines, etc., new colours, and that this can be done on the fibre which has been dyed with Diamond Black. Various shades of black are thus produced, green, grey, blue, and reddish blacks.

THE DYEING OF HALF-SILK (SATIN) RIBBONS.

(Continued from page 306.)

PALE OLIVE.

The silk is first dyed with induline, indigo carmine, archil, or orange G, in an acidulated bath at from 50° to 60°C. After washing well the cotton is mordanted with tannin, then dyed cold with new blue D and chrysoidine.

DARK OLIVE.

The goods are first passed through a tannin bath; then the silk is dyed as for pale olive, after which the goods are passed through a bath of nitrate of iron. The cotton is next dyed in a cold bath of new blue D, methylene blue, new green, or chrysoidine; after dyeing the ribbons are washed and brightened with a weak bath of acetic acid.

VIOLET.

The silk is dyed with methyl violet and acid magenta in a broken old boiled-off bath at about 50°C.; then, after washing, the goods are 'tanned' and dyed in a cold bath of methyl violet and safranine.

PALE BLUE

Can be dyed on the fibres in one bath, as follows:—The ribbons are first treated with tannin, then with tartar emetic. The dyeing is done with methyl blue in a lukewarm soap bath, washed and brightened with weak acetic acid.

BLACK.

Aniline black can be dyed on half-silk ribbons by any of the usual methods, and gives good results. Blacks from logwood and tannin can be dyed on the goods by the usual processes, which do not need detailing here.

ROSE.

Prepare the goods with tannin and tartar emetic, and dye with rhodamine at the ordinary temperature.

2nd Method:—This consists in first dyeing the fabrics with the benzidin colours: benzopurpurine, benzoazurine, chrysamine, etc., which do not, as a rule, dye the silk of the same shade as the cotton; then working in solutions of the basic coal-tar colours to get the silk of the same shade as the cotton.

RED.

A dye-bath is made with benzopurpurine, shaded, if required, with benzoazurine or chrysamine and soap. In this the goods are worked at the boil for 1½ hour, after which they are washed well and the silk is dyed to shade in a bath of magenta, safranine, phosphine, and violet, acidulated with a little acetic acid, after which the goods are washed and dried.

ORANGE.

The first dye-bath is made with benzopurpurine and chrysamine, or Congo orange R. The silk is dyed with chrysoidine, orange G, at a lukewarm heat in an acidulated bath.

YELLOW.

Dye with chrysamine or titan yellow, shading the silk with auramine.

DARK BLUE.

Dye first with benzoazurine, then bring the silk up to shade with methylene blue and brilliant green.

OLIVE.

The first bath is made with benzoazurine, benzopurpurine, and chrysamine, after dyeing in which the silk is dyed in an acetic acid bath with methylene blue, chrysoidine.

BORDEAUX.

Dye first with benzopurpurine and benzoviolet, and secondly with magenta, violet, and chrysoidine, with acetic acid.

BROWN.

The first bath is made with chrysamine, benzopurpurine, and benzoazurine; the second with Bismarck brown, new blue, and chrysoidine, with a little acetic acid.

GREY.

Benzoazurine or azo blue, shaded with chrysamine and benzopurpurine, forms the first bath; the second is got with new blue, methylene blue, safranine, chrysoidine, and violet.

ROSE.

Dye in the first bath with roseazurine; in the second with safranine.

(To be continued.)

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:—

DARK CHESTNUT BROWN ON COTTON.

For 100 lb. cotton. Prepare a dye-bath with
- 10 lb. salt,
- 3 lb. benzobrown N B X.

Raise to 150° F.; enter goods, heat to boil, and work for one hour; lift, rinse, and dry.

BRIGHT MAHOGANY BROWN ON SILK.

For 10 lb. silk. Prepare a dye-bath with
- 1 lb. salt,
- 1½ oz. benzobrown B X.

Heat to 150° F., enter silk, raise to 180°-190° F., and dye to shade. Lift, rinse, and dry.

BLUE ON CLOTH.

For 100 lb. of cloth. Mordant by boiling for 1½ hour with
- 4 lb. bichromate of potash,
- 1½ lb. oxalic acid.

Rinse and enter into a dye-bath containing
- 1½ lb. alizarine Bordeaux B,
- 1 lb. sulphuric acid.

Enter goods at 120° F., raise slowly to boil, and dye boiling for 1-1½ hour; lift, rinse, and dry.

NAVY BLUE ON CLOTH.

For 100 lb. cloth. Mordant by boiling for 1½ hour with
- 4 lb. bichromate of potash,
- 1½ lb. oxalic acid.

Lift, rinse, and dye in a new bath containing
- 5 lb. alizarine Bordeaux G,
- 1 lb. sulphuric acid.

Enter at 120° F., raise slowly to boil, and dye for 1½ hour, lift, rinse, and dry.

BLACK ON WOOL.

Prepare a dye-bath for 100 lb. wool with
- 12 lb. logwood extract,
- 2 lb. fustic extract,
- 6 lb. copperas,
- 4 lb. bluestone,
- 3 lb. oxalic acid,
- 2 lb. tartar.

Boil the goods in this for one hour.

GOLD ORANGE ON CARPET YARN.

For 100 lb. carpet yarn, mordant with
- 3 lb. bichromate of potash,
- 2 lb. tartar

for 1½ hour at the boil; rinse, then dye in a new bath with
- 1 lb. alizarine orange,
- 7 lb. fustic extract.

Work at 100° F. for half-hour, then heat gradually to the boil and dye for 1½ hour at that temperature. Lift, rinse, and wash.

IMPERIAL RED ON WOOL.

For 100 lb. of wool. Prepare a dye-bath with
- 2½ lb. eosine,
- 1 lb. orange,
- 5 lb. acetic acid.

Dye at 150° to 170° F. to shade.

YELLOW ON COTTON.

For 100 lb. of cotton. Prepare a dye-bath with
- 1 lb. titan yellow Y,
- 10 lb. salt.

Heat to 180° F.; enter the goods, raise to boil, and dye for one hour. Lift, wash, and dry.

ROSE PINK ON SILK.

For 10 lb. silk. Prepare a dye-bath with
- 1 lb. salt,
- ½ oz. titan pink BB,
- ½ oz. acetic acid.

Dye at 180° to 190° F. for one hour. Lift, wash, and dry.

CRIMSON ON SILK.

For 10 lb. silk. Prepare a dye-bath with
- 1 lb. salt,
- 3 oz. titan pink BB,
- ½ oz. acetic acid.

Dye at 180° to 190° F. for one hour.

SAGE GREEN ON WOOL.

For 100 lb. wool. Mordant by boiling for 1½ hour with
- 3 lb. bichromate of potash,
- 1½ lb. tartar.

Rinse; dye in a fresh bath with
- 5 lb. Gambine B.

Work half-hour cold, then heat to boil, and work 1½ hour longer; lift, rinse, and dry.

DYEING ANILINE BLACK ON COTTON.—The following process has been patented in France: 1st. The cotton is treated in a bath of sulphated castor oil, using 2 lb. oil and 50 lb. of water to every lb. of cotton; after working in this the cotton is wrung out. 2nd. The cotton is next treated in a bath of 20 lb. hydrochloric acid and 10 lb. of bichromate of soda. 3rd. From the last bath it now passes to a bath of 5 gallons water, 50 lb. aniline, and 5 lb. hydrochloric acid, and 1 lb. of chlorate of potash is added to this bath. These proportions are for 100 lb. cotton. [The proportion of acid is extremely small; we should think that there is some mistake here.—ED. *T.M.*] In this bath they remain some time until they take an olive green appearance; then finally they are passed through a bath of 6 lb. bichromate of potash in 100 gallons of water, at a gentle heat, while the olive green colour changes to black. The colour is stated to be very fast.

ALIZARINE, together with most alizarine colours, is generally sold in the form of a paste containing about 20 per cent. of actual colouring matter and 80 per cent. of water. It is obvious that this is not exactly the best and most economical form, chiefly because of the extra expense of packing, carriage, etc. Alizarine can be obtained in a dry form, but the objection to this is the fact that this dry form does not mix readily with water, not being soluble in that medium, so that there is a certain loss of colouring matter and also more unevenness in the goods dyed with dry alizarine. It is now proposed to employ the alizarine colours in a dry form and to dissolve them by means of alkalies and alkaline salts; and finally, as these alkaline solutions are not suitable for dyeing or printing, to precipitate the alizarine out by means of an acid. Thus to dye 100 lb. of fabric, 3 lb. dried alizarine colour are taken, mixed with 1½ to 2 gallons of water, 1¾ lb. of caustic soda at 60° Tw. and 5 oz. borax, boiled, and added to the dye-bath, then 1½ lb. hydrochloric acid of 30° Tw. are added, and 7 oz. acetate soda, when the dyeing is proceeded with as usual.

THE great Chemical Union has been registered at last—only by another and less familiar name—namely, "The United Alkali Company, Limited." The capital is to be £6,000,000 in £10 shares—300,000 preference and 300,000 ordinary. The objects are sufficiently multifarious to justify the appellation of "Jack of all Trades." The company takes powers to manufacture all kinds of chemical products; to carry on business as colliery owners, rock salt proprietors, miners, dyers, drysalters, manufacturers of manure, soap, paper pulp, glass, bricks, pottery, coke, cement, waterproofs, and leather; as millwrights, makers of locomotives and wagons; as quarry proprietors, metallurgists; to manufacture and supply gas and electricity—*cum multis aliis*. It is to have an honorary president and four honorary vice-presidents, who are to be *ex-officio* directors, in addition to the regular Board, which is to consist of not less than nine or more than twenty members. The attempted monopoly comes out with a big enough flourish of trumpets, but until we see the prospectus we cannot say by what arguments it will seek to secure the adhesion of the public. One thing is certain: no sooner is the company floated than competitors will arise. For half of the capital now sought works could be started which would be capable of an output quite as large as that of the acquired properties. The owners of these properties, moreover, have reasons for selling which are not at all calculated to induce the public to invest in the shares of the union.—*Financial News*.

THE second picking of the Egyptian cotton crop is proving exceptionally good in all the districts. The yield will probably reach 4,000,000 cantars. This is most gratifying when it is considered that the season has been remarkably unfavourable. It forcibly shews the benefit that is accruing to the country from the English administration of its affairs.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND AND WALES.

Bangor.

Demonstrations took place on Monday in Carnarvonshire in celebration of the attainment of the majority of H. J. Heylen Platt, eldest son of Colonel Henry Platt, Gorddinog, Bangor, and Werneth Park, Oldham, the grandson of the late Mr. John Platt, M.P. The Carnarvonshire tenantry and friends presented an address and a piece of silver plate, and the gift of the Anglesey tenantry was a silver loving cup.

Blackburn.

The strike at Messrs. John Dugdale and Sons, Daisyfield Mill, still continues.

On Monday last the foolish strike at Messrs. Clayton and Frith's shed at Langho ended by the weavers returning to their work exactly as they went out. Having wasted several weeks' wages for a crotchety notion perhaps they will be a little wiser—for a few months.

At the Blackburn Borough Court, on Wednesday, David William Taylor, of the firm of D. and W. Taylor, cotton manufacturer, Park-place Mill, was summoned in ten cases for allowing women to remain in the factory at 5-35 p.m., on September 23rd. The offence was admitted by Mr. Cooper, who appeared for the defendant. He asked that the cases should be dismissed with a caution, as the firm was hardly to blame in the matter. The engineer, James Whalley, had instructions to stop punctually at half-past five, but on this day he had been called away to do some work in another part of the mill, and while he was there the Inspector found the women at work. The Bench imposed a fine of £1 and costs in two cases, and costs in the others.

At Blackburn Borough Court, on Monday, Messrs. J. and J. A. Porter, of Green Bank Mill, were summoned, under the Cotton Cloth Factories Act, 1889, for allowing excessive moisture in their mill on the 9th of September last. Mr. E. H. Osborne, inspector, said that he had complained frequently of an excess of moisture in this mill, and in July last he gave formal notice to amend, and told the defendants that a repetition of the offence would render them liable to a penalty. On receipt of the schedule of September, he saw that during the greater part of the month the moisture had been greater than was allowed, and he considered it impossible to pass the matter. Mr. Porter, who appeared for the defendants, admitted Mr. Osborne's statement, attributing the irregularities to a change of managers. During October, he said, the Act had been complied with. Mr. Osborne did not press for the maximum penalty, and the minimum of £5 and costs was imposed.

Bolton.

On Monday evening a presentation was made to Mr. Thomas Pilkington, late overlooker at the Park Mill, from the spinners, etc., there employed. It took the form of a gold albert and a silver-mounted pipe.

Bradford.

On Wednesday morning Mr. William Whitley, a Bradford manufacturer, who lives at Chellow-terrace, Allerton, attempted to murder his wife by strangling and beating her. She now lies in a critical condition, and her depositions have been taken. Mr. Whitley has been depressed for some time past, and there appear to be good grounds for believing that his mind was affected.

A disastrous fire broke out on Wednesday night at Industry Mills, Dudley Hill, occupied by Messrs. Benjamin and Matthew Hillas, commission woolcombers and spinners. The fire, which commenced in the engine-house, spread with extraordinary rapidity, and was not extinguished until damage had been done amounting to many thousands of pounds. Various theories are put forward as to the origin of the fire, and an attempt, it is said, was made to set fire to the mill about two years ago, when some matches and paper were discovered under a floor. The damage amounts to about £10,000 (insured).

The death of Mr. Thomas Williams, worsted spinner, of Claremont, Bradford, and Montserrat Mills, Tong, took place at his residence on Tuesday evening, very suddenly. Mr. Williams had been at the mill during the day up to five o'clock. After arriving home he began to feel unwell, and died about eight o'clock. Mr. Williams started in business about 30 years ago in Valley-road, Bradford, at Leeming Mills, whence he transferred his business to Ivy and Portland Mills, Bradford, and more recently to Montserrat Mills, Tong. He was of a very genial disposition, and had made many friends, both in business and social circles. He was associated with the Eastbrook Wesleyan Chapel, Bradford.

At the annual soirée of the Bradford Mechanics' Institute on Friday of last week Lady Frederick Cavendish distributed the prizes to the successful students at the late examinations. Mr. Shaw-Lefevre, M.P., who was present, described the impressions which he had gained in his recent visit to Constantinople, Athens, and other cities. He quoted authorities who stated that the German merchants were making unusual efforts to develop trade with Turkey and Bulgaria, and that unless there were some corresponding activity on the part of English merchants there must be a serious loss to England's trade with those countries. With these authorities he expressed himself in agreement.

At the London Bankruptcy Court, on Tuesday, an application was made by Mr. Registrar Linklater for an order of discharge on behalf of Matthew Henry Sawer, worsted stuff manufacturer and merchant, of Hammerton Mills, Leeds-road and Booth-street, Bradford; Lever-street, Manchester; and Carey-street, Cheapside, London. The debtor failed in 1879, with liabilities £28,746 19s. 9d., and assets £14,656 4s. 4d. Mr. T. C. Wallis appeared in support of the application, and stated that Mr. T. K. Stubbins and Mr. W. M. Gray, both of Bradford, the trustees under the proceedings, had paid a dividend of 8s. 6d. in the pound to the creditors, and that no offences had been reported by the trustees. Mr. H. Reed, on behalf of the Bradford Bank, and a creditor named Watkins opposed the application. The Registrar said a dividend of 7s. 6d. in the pound was paid some years ago, but the debtor remained undischarged. Since then a relative died, and the creditors reaped the benefit of the legacy. Taking the facts into consideration that the failure occurred eleven years ago, and that a substantial dividend had been paid, he saw no reason why the order should not be granted. The application was accordingly granted.

Burnley.

On Tuesday morning a fire broke out in the scutching-room at Messrs. Whittaker and Lupton's Mill, Sandygate, but it was soon extinguished with the fire apparatus at the mill. It had originated through some hard substance getting into the scutching machine.

Cleckheaton.

The following is the Chamber of Commerce trade report for October:—"Wool, worsted spinning: There has been a quiet and decreasing business during the month, with drooping prices. Cards: We report as last month. Flannels: The improvement in the flannel trade referred to last month still continues. Machinery and engineering: Trade seems to be falling off gradually week by week. Chemicals: Trade has been pretty good through the month. Dyeing: The dyeing trade is rather quieter than last month."

Colne.

On Wednesday, Messrs. Foulds and Sons, manufacturers, were fined 10s. and costs for allowing children to clean machinery in motion. Messrs. Shaw and Co., manufacturers, Brierfield, were fined 10s. and costs in one case, and costs in five others, for allowing six females to work during the dinner hour.

Darwen.

We deeply regret to have to announce the death, on Saturday last, of Mr. Alderman John Walmsley. Mr. Walmsley was for many years a leading cotton spinner and manufacturer in Darwen. In early life, if we remember rightly, he was a hand-loom weaver, and after the decline of that old industry he became a small shopkeeper. He was essentially a self-made man, having by industry and economy amassed sufficient money to enable him to commence manufacturing, which business he entered over forty years ago. His name stood very high in the market as that of a man of sterling integrity and uprightness, whose word in every transaction was as good as his bond. He was of a most kindly and genial disposition, ever ready to lend a helping hand to the poor and needy. In the great disaster which fell upon Lancashire during the American civil war, he closed his mill for a short time owing to the scarcity of cotton, but the distress this brought upon his workpeople was so painful to him, that he re-opened the mill, with a declaration that as long as he could purchase a bale of cotton he would continue to work it for their sakes. He was one of the earliest to adopt and advocate the principles of the temperance reformation. In the public affairs of Darwen he has for a long time taken a leading part. For many years he was a Sunday School teacher and superintendent in connection with the United Methodist Free Churches. For some time past his health has been declining, and it was owing to his enfeebled condition that the accident—a fall downstairs—occurred, which has practically terminated his life. The funeral took place on Wednesday, flags floating at half-mast over all the public buildings, and the streets being crowded.

Halifax.

Mr. Walter Greenhalgh, representative for Messrs. Cain, Son, and Greenwood, card-clothing makers, has sailed for the States on a business tour.

Haslingden.

Much regret was expressed in the town on Tuesday on its becoming known that Mr. James Lambert, of Carr Hall Mill, cotton manufacturer, had died at his residence, Carr Villas, early that morning, after a long and painful illness, following a paralytic seizure. Mr. Lambert, who was in his 66th year, was a member for Haslingden of the Lancashire County Council; he was also a member of the Haslingden Board of Guardians, and some years ago was a prominent member of the Local Board. He commenced life as a factory operative, and by integrity, perseverance, and enterprise, raised himself into a cotton manufacturer. He was very popular with all classes, and few men were more highly respected. He was one of the leading members of the Trinity Baptist Chapel.

Kidderminster.

The death on Saturday morning last of Mr. Thos. Baldwin Worth, junior partner in the firm of Thos. Bond Worth and Son, carpet manufacturers, Stourport, created a most painful sensation throughout the entire Kidderminster district; indeed, it is seldom that the removal by death of one so young evokes such wide-spread sympathy. Although it was pretty generally known that the deceased gentleman had been confined to his bed for two or three weeks, suffering with rheumatism and other rather severe disorders, his ultimate recovery was never seriously doubted by his friends or by his medical advisers, up to within a few hours of his demise. Mr. Worth, who was only married about 15 months ago, was the eldest son of Mr. T. Bond Worth, and had only recently been admitted as a partner in his father's business—one of the best in the carpet trade. He was a young man, having hardly reached his 25th year, with rather more than the average intelligence, and his future was full of promise. He had acquired a thorough practical knowledge of the trade, having worked through all the more important departments. To his father, who unfortunately does not enjoy unlimited good health, his assistance was of inestimable value. The deceased was warm-hearted and generous to all with whom business brought him into contact. He was public-spirited, and in his native town had risen to a sphere of great usefulness, and his loss to many of the charitable and other institutions will be seriously felt. As a proof of the high esteem in which the deceased was held, 500 or 600 persons of all classes followed his remains on Tuesday to their last resting place.

Leeds.

Mr. Edwin Woodhouse, of Armley Grange, has been appointed president of the Yorkshire College Textile Society, and Mr. B. Shaw has been elected hon. secretary in succession to Mr. A. F. Barker, who has been appointed head master of the Textile Department at the Salt Schools, Shipley.

Leek.

Whilst preparing for church on Sunday morning, Mr. John Ward, head of the oldest silk business in Leek, was seized with an apoplectic fit and died in two hours. The deceased gentleman, who was in his 70th year, was a county magistrate, an improvement commissioner, and in many ways prominently identified with public affairs.

Leigh.

We understand that the new mill of the directors and shareholders of the Mather Lane Spinning Company, Limited, will contain about 120,000 spindles, and the cost is estimated as about £150,000.

Manchester.

About eight o'clock on Monday night fire was found to have broken out amongst some grey goods in the premises of Messrs. S. Hazzopulo and Co., in Oxford-street. The fire brigade were summoned and after about an hour's work they succeeded in extinguishing the flames. The fifth floor and its contents were considerably damaged by fire, and the fourth floor, which was used as offices, was much damaged both by fire and water. The origin of the fire is not known.

Oldham.

Mr. R. Knight, the inside manager at the Sun Mill Company, has resigned his position.

The Granville Mill Company is adding another storey to a portion of their premises.

The directors of the Ash Spinning Company have placed an order for revolving flat carding engines with Messrs. Asa Lees and Co., Limited.

The Oldham Engineering Company has secured the order for the supplying of the whole of the mill gearing for the Irk Mill Company, Middleton.

The directors of the Werneth Spinning Company have placed their order for smoke prevention apparatus with Messrs. Bennis and Company, of Bolton.

On Saturday afternoon the first sod of the Holly Mill Company was cut by Mr. George Holden, the chairman of the new company, in the presence of a small gathering. The order for the four boilers has been placed with the Oldham Boiler Works Company.

An agreement has been come to between the Oldham Employers' Association and the representatives of the Operative Spinners' Association, by which the strike at the Melrose Mill, Butler Green, which has been going on for three months, has terminated. The terms of settlement are strictly private.

The Stamford Spinning Company's Mill is approaching completion, windows are being put in, and the concrete fire-proofing is proceeding apace. We might remark as to mill building in this district that some delay is just now being caused through difficulty in obtaining delivery of the necessary ironwork.

The directors of the Broadway Spinning Company state that the engines (the repairs of which have been carried out by Messrs. Urmson and Thompson, Oldham) are now working satisfactorily. The additions to the building are complete, and the machinery is being transferred to the same with all despatch.

We have previously intimated that measures were in progress for the formation of a limited company to build a ring mill at Moston, which is stated to be under the patronage of a local eminent firm of machinists. The mill is to contain 120,000 spindles. The following are mentioned as promoters:—Messrs. John Cottam (manager, Olive Spinning Co.), James Smith (manager, Summervale Mill Co.), Robert Evans, John Butterworth, and Thomas Bolton.

The directors of the Werneth Spinning Co. have taken a ballot vote of the shareholders on the advisability of extending the mill premises, the result of which they state is as follows: In favour of the extension, 332 (representing over 14,000 shares out of 24,000 shares); against, 92; informal, 20; neutral, 7; not replied, 147. In accordance with this decision, the chairman will propose a resolution at the quarterly meeting sanctioning the extension.

At the Oldham Police-court, on Wednesday, Messrs. R. Shiers and Brothers were summoned for fifteen breaches of the Factory and Workshops Act. Mr. James Pearson, the inspector under the Act, said that on October 13th he found the machinery at the defendants' mill, in Shaw-road, running six minutes after time, and the persons named in the summonses working. The Bench imposed a fine of 5s. and costs in each case.

A movement is on foot in Oldham to present Mr. S. R. Platt (head of the firm of Messrs. Platt Bros. and Co., Limited) with a testimonial to take the form of a portrait of himself, in recognition of his services to the town. An influential committee has been formed, and in order to allow the fund to be participated in as widely as possible, it has been decided that the maximum subscription should be one guinea.

The starting of the Beal Mill Company was celebrated on Saturday last. The managing director (Mr. James Henthorn), in replying to the toast of success to the company, spoke hopefully of the future of the new undertaking, the heads of which he trusted would work harmoniously with the workpeople, and pay them good wages, while, at the same time, meeting the demands of the shareholders. The company starts well, and if it does not out-distance some of its compeers in the district not a few will have something to say about it.

On Saturday evening a special meeting of the members of the Oldham Weavers, etc., Association, was held in the Temperance Hall, Horsedge-street, to consider a proposed resolution of want of confidence in the secretary (Mr. A. Buckley). The complaints against the secretary were made by Mr. Joseph Broadbent, and replied to by Mr. Buckley. A ballot of the members was taken, with the result that the resolution was rejected by 161 votes to 55. Councillor D. Holmes, of Burnley (president of the Northern Counties Weavers' Amalgamation), occupied the chair, and throughout the proceedings were of an excited character.

Another link binding the local spinning and manufacturing business with the past is fast being removed. We refer to the demolition which is going on of the Lowerhouse Mills, formerly owned by Messrs. Radcliffe. This family at one time were the leading spinners and manufacturers in the town, but they no longer hold that proud position. Both Lowerhouse and Wallshaw Mills will soon be no more, and give place to property of another description. Although they have passed away, there have arisen—not on their ashes—mills which for dimensions are the wonder of the world, inasmuch as on one floor as many spindles are now placed as were formerly contained in a whole mill.

The sudden fall in cotton last week-end caused considerable comment in local commercial circles, especially as it is reported that several spinning companies have recently purchased very heavily. It is felt that for the next twelve months there is going to be a good trade for spinners and manufacturers, although some of the former may not be able to reap the full benefit, owing to their cotton contracts. Still, there are a few who have, during the past two or three weeks, sold large quantities of yarn, which they are now beginning to cover with cotton. Some sanguine prophets said they would not be surprised to see American cotton touch fivepence. Well, we shall see.

Several members of the cotton fraternity have been successful in the municipal contests at Oldham. Mr. Robert Whittaker (of the firm of Messrs. Dronsfield, spinners and manufacturers, Werneth Mills) has again been elected Councillor for Waterhead Ward, his opponent being Mr. Noel Haigh (of the firm of Messrs. Haigh and Company, machine makers); in St. Mary's Ward, Mr. J. H. Butterworth (of the firm of Messrs. Butterworth and Sons, spinners and manufacturers, Globe Mills, Hollinwood), tied with the retiring candidate (Mr. James Nield, printer), who was elected on the casting vote of the returning officer. Mr. J. F. Andrew (cotton waste dealer), was successful in Westwood Ward. Mr. J. S. Dronsfield (of Messrs. Dronsfield Bros., Atlas Works, Oldham), was unsuccessful in St. Paul's Ward. In Hollinwood Ward Mr. E. Stansfield (of Messrs. Murgatroyd and Stansfield, cotton spinners, Richmond Mill, Hollinwood), received the favour of the ratepayers; while Mr. J. E. Pemberton (cotton waste dealer), was unsuccessful in Clarksfield Ward.

Preston.

A meeting of the promoters of the new spinning mill for Preston, a public meeting in furtherance of which project was held at the Public Hall recently, was held last week, to take into consideration the position of affairs. On all hands it was agreed, from promises received, that there would be no difficulty in obtaining the requisite capital to start the venture; but as they could not induce experienced gentlemen to join the directorate, and thus form a really strong board of directors, which was considered to be absolutely essential, it was resolved not to take any further steps in the matter at present.

Radford (Nottingham).

Messrs. Hollins and Co. have placed an order with Messrs. Lord Bros., of Todmorden, for a Bale Breaker and Lattices for mixing purposes.

Rossendale.

The *Lancashire Evening Post* says that Mr. Eli Heyworth, cotton manufacturer, of Blackburn, will in all probability accept the invitation to contest Rossendale against Lord Hartington at the next general election. His principal objection to accepting the invitation at present is ascribed to the fact that he is deeply concerned with the affairs of the National Telephone Co., of which he is chairman, and is giving the best part of his energy to its affairs. He has promised to give a definite reply to the deputation from Rossendale soon after Christmas.

Worcestershire.

Inspired by the example set in the Langdale district of Cumberland, an attempt is being made to establish cottage flax-spinning in Worcestershire. Those who have taken the matter up say that there is "an ever-increasing demand for spun flax," and that the poorer country folk will therefore easily find a market for their yarns. The existence of such views is a proof of the fact that those responsible for them know nothing about the flax trade, and in any case hand-spun flax can never compete with the product of the factory. Considering the decline that has taken place in the number of spindles in Scotland and England of late years, it sounds ridiculous to hear people talk about reviving an industry which could not possibly survive.

SCOTLAND.

Glasgow.

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

India, China.	United States and Canada.	W. Indies and South America.	Australasia.	Continent.	Totals.	Totals previous week.
£	£	£	£	£	£	£
111,358	14,653	5,680	2,562	256	134,509	89,032
182	9,843	455	454	—	10,934	15,498

Paisley.

The subscription list for the Sir Peter Coats statue fund, which has for its object the erection of a bronze statue to the memory of the late Sir Peter Coats, has now been closed. The total amount collected is £2,256.

IRELAND.

Belfast.

During the period of three months ending 30th September last, 9,185 tons of linen were exported from Belfast, as compared with 7,815 exported during the corresponding period last year. The increase is due in a great measure to the action of the McKinley Tariff Bill.

Miscellaneous.

ORIENTAL CARPET WEAVING.

(By Professor Dr. J. Lessing, Berlin.)

(*Continued from page 309.*)

Carpets with a large open ground are rare. We have usually to do with carpets having their whole ground covered with patterns in which different shades produce that charm of colour admired so much in the older Oriental specimens. The Orientals are well aware that a carpet can be made soft only by use; and therefore carpets are trampled on by a number of persons walking over them, pieces of linen being spread on the top to protect them. Finally, the Oriental sits on his carpet; and by means of his sitting and lying and not excessive cleanliness, the carpet acquires another layer of gloss which heightens yet more the charm of colour in the eyes of the Oriental. A European certainly hesitates about a dirty article of this sort, but he can protect himself in some measure by washing it, a process which it will bear to a surprising extent. A genuine old carpet can be cleaned by laying it two days in running water, or in default of that, in a conduit; it should afterwards be thoroughly scoured with a brush and soap, and then rinsed in clear water. It is quite amazing how much freshness of colour and clearness are restored in this way.

The colours of Oriental carpets have degenerated very greatly during the last twenty or thirty years. Unfortunately European colours, and amongst them aniline dyes, have been imported into the East, and they impart to older carpets a shabby appearance and change into an ugly grey.

In Western Asia it is mostly women, in India principally men, who make these carpets. Amongst others, the members of nomad tribes practise the industry. They sit crouching at their looms before such a carpet, which explains the usual smallness of the looms. They are made only so broad that the workers can comfortably tie from one end to the other without moving from the spot. The production of the larger carpets demands the co-operation of several persons, because otherwise an individual would have to hurry backwards and forwards. For the manufacture of a specially large one a multitude of people are required, who sometimes work two years at the production of one such carpet. This method of manufacture also accounts for the inequality of these goods. These carpets are scarcely ever equal, and they easily crease if they are not evenly spread out. Then the carpet is worth less by half, but the Orientals help themselves out of the difficulty by cutting out pieces and putting the thing together again, which, however, makes the whole intolerable.

Another awkward circumstance in connection with these carpets is that it is exceedingly difficult to get large pieces such as we use in Europe, for the people make the long strips only according to their need. If we wish to order anything we meet with the greatest difficulties; the people indeed accept the order, but, nevertheless, make the goods as it suits them, and only in Smyrna have Europeans succeeded in instructing the people to such an extent that they execute works on a considerable scale.

The design of Oriental carpets consists of nothing but small square patches. If the wool is tolerably coarse each patch is a tough bundle which by itself would separate, but is shut in on every side by other similar patches. This square arrangement exerts a strong influence on the pattern: we get mostly geometrical figures which are best adapted for the floor carpet, whereas vegetable and animal patterns make definite æsthetic demands. These geometrical patterns are diffused over all the countries of Islam, and even amongst the Slavs, where direct Oriental influence cannot be demonstrated, a similar pattern is conspicuous. Most of these geometrical Oriental patterns are purely imaginary. The case is quite different when a pattern with large blossoming trees is to be produced, for there a previous sketch of artistic merit must be prepared. We cannot really form an idea of the trouble which a piece of that kind occasions, for perfectly fine naps must be taken, if the previously-made designs are to be copied in all the details. It need not be remarked that such carpets cost enormous sums. Now, however much the design in such articles is drawn after nature, the colouring is always thoroughly adapted to the character of the surface.

It must not be forgotten that the purpose of the Oriental carpet is different from that of ours. Whilst amongst us the carpet is an actual covering for the floor and we are quite content with a fairly artistic design, the position of the Oriental is wholly different. By the side of his ordinary carpets on which he sits he has some which he only looks at. As large carpets are made only for splendid rooms, the palace of a rich Oriental contains a room like the *triclinium* of the ancients, which has a few mats so arranged that there is a large open space covered with a carpet. The Orientals, sitting in a squatting position, have their gaze directed downwards, and look on the carpet lying before them, which to all intents and purposes fulfils the function of a picture. The flowers in such a picture are not insignificant for the Oriental, but are for him a sort of poem, as his birds are to a native of Japan. A carpet is the sanctuary of the house, and the sanctuary of the man who belongs to Islam. The so-called prayer carpets are 1½ metres in height and a little more than half a metre in breadth, and are furnished with a pointed field at the top. When a man prays he lays the carpet so that the points turn towards Mecca. Then there are in the East carpets which are used in common by a number of persons, and there are also carpets for the different seasons of the year. In the manufacture of these carpets costly materials, even gold and jewels, have sometimes been used.

Very remarkable and important is the distribution of carpets over the whole East. The principal place of exchange is Mecca, to which every Moslem is accustomed to take carpets as sacred offerings, as he is bound to visit that city once at least in his life. These carpets are then hung up in Mecca in the holy place. We are told that this used to be done to such an extent that scaffoldings had to be built to accommodate the enormous quantity of carpets received; and as early as 760 A.D. they were so over-weighted that they had to be taken down to avoid an accident. Very soon, however, hundreds and hundreds of carpets were again collected. These were kissed by the faithful, and then, when they were tolerably ragged, were taken back as relics to their respective homes. During the last century agents travelled over the whole of Persia, and bought up all the old carpets, which in many cases were regarded as very valuable. In this way has Europe become flooded with such articles; Europeans have learnt from these carpets, and now the manufacture of pile carpets is very widely diffused in Europe and especially in Silesia. But the East still provides us with great quantities which, however, in many cases no longer exhibit the patterns peculiar to the Orient, but those which have partly been taken there to it. This causes confusion, which will make it difficult for the future historian of civilisation to make himself adequately acquainted with the facts in this extensive subject.

DETERIORATION OF INDIAN COTTON.

The following communication has just recently been carefully considered by a special committee composed partly of members of the Liverpool Cotton Association and partly of members of the Surat Committee of the United Cotton Spinners' Association, and a reply thereto will be immediately despatched to Mr. Commissioner James, of Ahmedabad:—

Ahmedabad, Bombay.
To the President of the Liverpool Cotton Association.

SIR,—In the interest of the cultivation of cotton in Goojerat, which forms part of that division of the Bombay Presidency at present in my charge, I take liberty of addressing you on the subject of the mixing and adulteration of cotton which is at present rife in the Presidency.

1. You are possibly aware that during a long series of years the Bombay Government legislated in order to maintain the staple cotton of this Presidency free from adulteration and mixing. The first Act was Regulation 3 of 1829. In 1863, during the American war, when the demand for Indian cotton was great, Sir Bartle Frere passed a strict Act, which was afterwards amended in 1878. This, however, was repealed altogether in 1882 by Sir James Fergusson at the instance of Messrs. Gaddum and Co., and other Bombay firms, who urge that they could select and export good cotton without the interference of the law or the State.

2. It appears, however, that in the short-sighted endeavour to pass off inferior cotton as good, many members of the mercantile community of this Presidency are now lending themselves to the practice (strictly forbidden by the former laws) of bringing cotton from districts where inferior staples are grown to districts with good staples, and ginning them together, so as to pass off the whole as good stapled cotton. And even cottons separately ginned and imported into Bombay are mixed in that city in an elaborate way by a machine called an opener. These practices have, I am informed, given Indian cotton a bad name in the Liverpool market. The practice also directly affects the source of supply. The Broach district has hitherto yielded the best cotton in the Presidency (saw-ginned Dharwar used to be far the best, but has been ruined owing to various causes that I need not here go into). But owing to bad cotton being imported into the Broach district and ginned there for the purposes of adulteration, the mixed seed finds its way to the Broach cultivator, who from such seed can only raise an inferior crop; hybridising goes on, and the whole of the Broach cotton is likely before long to be ruined. For the same reasons Dhollerah cotton is falling off in value. The owner of a local cotton mill has given me the following figures, shewing that the price of Indian cotton is going down at home compared with American:—

Middling American	July, 1890, 6¼d.
Good Fair Dhollerah.....	July, 1890, 4¼d.
Difference.....	2¼d.
Middling American	July, 1889, 6$\frac{3}{4}$d.
Good Fair Dhollerah.....	July, 1889, 4$\frac{3}{4}$d.
Difference	1$\frac{15}{16}$d.
Middling American	July, 1888, 5$\frac{7}{16}$d.
Good Fair Dhollerah	July, 1888, 4$\frac{5}{16}$d.
Difference.....	1$\frac{1}{16}$d.

3. The inference, therefore, is that good Dhollerah and Broach cotton will shortly cease to exist. No doubt cases have occurred where bad cotton has supplanted good without much mischief. In Khandeish the bad, short-stapled Waradi has entirely supplanted the long, silky Hingunghat, which was introduced by Mr. Lionel Ashbourne, C.S.I., but the superior yield of the former makes up for its lack of quality. This precedent is, however inapplicable to Broach, where there is no reason to believe inferior seed would yield more than the existing fine staple.

4. I am anxious, therefore, before the Broach and Dhollerah cottons are irremediably ruined, that the Government of Bombay should interfere. The Bombay merchants will probably raise objections on the ground that so long as they can make a profit on the cotton passing through their hands interference is not called for. But the depreciation in the value of Indian cotton, which is likely to be accentuated by the recent high rise in silver, is of vital importance to the producer, and it is likely to affect the land revenue of the Government.

5. I am engaged in collecting facts, and have already obtained more than sufficient to shew that, besides the revival of deliberate adulteration of cotton with foreign matter, the importation of cotton into good districts in order that it may be mixed with cotton there, and stamped as coming from the good district, is very common all over Goojerat. So gross is the evil that I believe that about four times the quantity actually grown in the district is exported under the name of "Broach." I hope to be in a position to address the Government of Bombay on the subject shortly. Meanwhile, my attention has been called to a by-law relating to a falsely packed East Indian cotton, reported to have been passed by the Liverpool Cotton Spinners' Association, clause 3 of which is said to run as follows: "All East Indian cotton shall be sampled in numbers, every bale being sampled unless buyers and sellers agree to the contrary. Should ten from out of the lot prove to be falsely packed, the buyers shall have the option of invoicing back on delivery terms or of cancelling the contract." (*Times of India*, July 24, 1890.) I am informed, too, that a large quantity of Broach and Dhollerah has been invoiced back, "and sold at a loss." I have heard also that contracts with French importers have been rescinded lately on similar grounds. If these be facts, it would seem that the complacency with which Bombay shippers buy and forward mixtures is not shared by those who have to use the cotton in Europe.

6. The action that I should like to see taken here would be on the line of the Merchandise Marks Act, making it penal to export mixtures without describing them as such. But before moving in the matter, I would ask you kindly to verify the information stated in my last paragraph, and to inform me:—

1st. If there be a demand in Liverpool for Bombay mixtures as such.

2nd. Whether spinners would purchase Broach or Dhollerah pressed in Bombay, if each bale were branded "Mixed Surats."

3rd. Whether there is any preference in favour of long unmixed silky cotton from the East Indies as opposed to short coarse and mixed staples.

7. I would also ask you kindly to give me any information in your power as to whether the falling off in price of Indian compared with American cotton is due to false packing, whether an increase of false packing, adulteration, or other signs of deterioration have been noticed in East Indian cotton of late years, whether the Liverpool merchants would consider it an advantage that every bale should really contain the variety of cotton whose name is stamped upon it, and whether there is a possibility of the price of East Indian cotton rising, and of more being purchased in England if its quality, cleanliness, and packing were improved.

8. I append a statement shewing the ports to which cotton was exported from Bombay in 1889-90. You will notice that Liverpool and London combined take a little less than one-fourth of the Bombay cotton, and that a great deal is exported to Havre, Antwerp, Hamburg, Genoa, and Trieste. It may be argued that if merchants in foreign countries are willing to buy adulterated and mixed cottons, the Liverpool markets can be left out of count. I do not know whether you can give me any information as to the use to which the cotton that is exported abroad is put, or as to the esteem in which it is held, but if it were in your power to do so, I should be grateful for any facts. It seems hardly possible that foreign merchants should look with favour upon practices which the Liverpool merchants find disadvantageous. Yet, if legislation be proposed, the query will be put, Why, if mixed East Indian cotton finds a ready market abroad, any interference by the State should be necessary to secure its export in an unmixed and unadulterated condition?

9. I am taking the liberty of sending a copy of this letter to the president of the Liverpool Chamber of Commerce, as I think it likely that the Chamber may also take an interest in the matter, and be willing to assist me with information. I need hardly add in conclusion that I shall be very thankful for any assistance that you can give me in this matter.

I have the honour to be, sir, your most obedient servant,
H. E. M. JAMES, Commissioner, N.D.

Auction of an Indian Mill.—On the 8th ult., Messrs. Bennett and Co., auctioneers, by order of the directors of the Gordon Spinning and Manufacturing Company, Limited, put up for sale by public auction at the mill premises at Mahaluxmi, the property, consisting of the leasehold ground, admeasuring 70,308 square yards, the blow-room, old and new engines, boilers, and various other articles, which are at present in good working order at the above mill. Sir Dinshaw Manockjee Petit, Bart., and his two sons, Messrs. Framjee and Bomonjee, who are the agents of this mill, together with their solicitor, Mr. Owen, of Messrs. Craigie, Lynch, and Owen, were present at the sale. It was advertised that the sale would take place at 3 p.m., but owing to the very small attendance of bidders the proceedings did not commence until two hours later. On the night of the 15th May last, a fire broke out in the spinning department of this mill, when the reeling, baling, spinning and carding departments, as well as the whole roof of the mill, were completely destroyed by the conflagration, the other property advertised for sale being fortunately saved from destruction. The first bid was for Rs. 1,00,000 from the agents of the mill, which sum was subsequently increased to Rs. 3,00,000. The property was ultimately bought in by the agents for Rs. 3,25,000.

A Wonderful Watch.—There is on view at the Manchester establishment (Moult-street) of Mr. T. R. Russell, the eminent watchmaker, a very remarkable watch, which may almost be deemed a mechanical wonder. It is a gold, keyless three-quarter plate hunter, of the highest finish and workmanship. It has a perpetual calendar which shews the days of the week, the days of the month, the month of the year, and the phases of the moon. It observes the arrival of a leap year, and keeps its reckoning correct, so that the calendar mechanism does not require resetting. In addition it is a double fly-back, minute chronograph, registering minutes and seconds, and the chronograph can be used without interfering with the time-keeping part of the watch. It is also a repeating watch, repeating the hours, quarters, and minutes, so that the exact time can be ascertained in the dark by simply moving the repeating slide. The work throughout is English, and of the very finest possible quality, in fact no better watch could be made at any price. Naturally a watch combining so many excellencies must of necessity be costly, as will be seen when we say that its price is £250. This is a considerable figure when looked at from an ordinary stand-point, but it is not beyond the means of a considerable number of gentlemen. Should any such feel a disposition to inspect it, Mr. Fort, the manager of the establishment, will be pleased to shew it. Moult-street is just opposite the front of the Royal Exchange.

Textile Markets.

COTTON.

Manchester, Friday.

The prospects of the cotton trade appear to be steadily improving. This is owing to the abundant crops that are announced for this season's out-turn from every field in which cotton is grown. It is quite within the bounds of probability that the American crop will attain to eight million bales; the Egyptian crop will also be the largest ever grown, and so far the news from India is highly favourable. As, however, the crop of that country extends over a much longer period of time owing to the geographical distribution of the cultivation of the plant, we have yet to await the completion of the reports. Notwithstanding the considerable increase of spindles there promises to be an abundant supply of the raw material, whilst prices are likely to rule lower than they have done for many seasons past. Both spot and future prices are now considerably below the lowest of last year, thus realising and justifying the predictions made in this column weeks ago. There are no particular features of interest calling for remark in either the spinning or manufacturing towns of the neighbourhood. A little restiveness is being manifested at Preston in relation to the new weaving list, which, it is alleged, will cause a reduction in that district to a greater extent than they are willing to accede to. The correctness of this statement, however, is very doubtful. As a manifestation of their dissatisfaction, at a meeting held on Tuesday it was rejected.

Cotton.—There has only been a small demand for the raw material throughout the week. The enormous receipts of cotton at the American ports, passing all precedent, have tended to greatly depress prices. It is hardly worth detailing the various features of each day's market, there having been very little difference in them. In spots the result of the week's changes is a reduction of $\frac{1}{16}$d. in American, bringing middling to $\frac{3}{8}$d. With all this there is no cessation of the pressure to sell. Upland cotton is still avoided through suspicion of damp. Sellers complain that the charge is greatly exaggerated, much to their injury. The charge spinners are bringing against this grade is that it is artificially damped. This may be true to a limited extent, though not to the full. It, however, forcibly illustrates how unfair dealing on the part of a few injures many honest dealers. Texas, against which no such charge is brought, is enjoying the favour of spinners. Brazilian has been in fair demand, but has declined $\frac{1}{16}$d. to $\frac{1}{8}$d. There is still great pressure to sell Egyptian, which, though in fair request, has gone down $\frac{1}{8}$d., and is still irregular. Smooth grades of Peruvian are down $\frac{1}{8}$d., roughs, though the turn easier, not being reduced. East Indian are generally reduced $\frac{1}{8}$d. Futures have exhibited several sharp fluctuations, the result shewing of $6\frac{1}{2}$ to $8\frac{1}{2}$ points for near and 5 to 6 for the more distant positions. The following particulars of the business of the week are from the official report issued by the Liverpool Cotton Association:—

	Import.	Forw'ded.	Sales.	Stock.	Actual Export
American	119,598..	62,841..	38,000..	325,310..	2,772
Brazilian ..	1,965..	1,219..	1,730..	13,470..	—
Egyptian ..	15,230..	7,792..	3,850..	50,550..	338
W. Indian..	261..	513..	1,380..	15,950..	540
E. Indian..	4,304..	5,399..	5,270..	191,980..	1,823
Total..	141,358	77,764	50,230	597,260	5,473

The official spot quotations from the same source are:—

	G.O.	L.M.	Mid.	G.M.	M.F.
American	$5\frac{1}{16}$	$5\frac{3}{16}$	$5\frac{3}{8}$	$5\frac{9}{16}$	$5\frac{13}{16}$

	M.F.	Fair.	G.F.
Pernam	$5\frac{3}{4}$	6	$6\frac{5}{16}$
Ceara	—	$5\frac{15}{16}$	$6\frac{1}{4}$
Paraiba	—	$5\frac{15}{16}$	$6\frac{1}{4}$
Maranham	—*	—*	—*

	Fair.	G.F.	F.G.F.	Gd.
Egyptian	$6\frac{1}{16}$	$6\frac{3}{8}$	$6\frac{5}{8}$	$6\frac{13}{16}$
Ditto, white	$6\frac{1}{8}$*	$6\frac{3}{8}$*	—	—

	Fr.	F.F.	G.F.	F.G.F.	Gd.	F.G.	Fine
M.G. Broach..	—	—	—	—	$4\frac{13}{16}$	$5\frac{1}{16}$	$5\frac{3}{8}$
Dhollerah	$3\frac{5}{16}$	$3\frac{11}{16}$	$3\frac{13}{16}$	$3\frac{15}{16}$	$4\frac{5}{16}$	$4\frac{7}{16}$	$4\frac{1}{2}$
Oomra	$3\frac{3}{8}$*	4	$4\frac{1}{8}$	$4\frac{1}{4}$	$4\frac{3}{8}$	$4\frac{11}{16}$	5*
Bengal	—	—	$3\frac{1}{4}$	$3\frac{3}{8}$	$3\frac{13}{16}$	$4\frac{1}{16}$	$4\frac{3}{8}$*
Tinnivelly	$4\frac{3}{8}$*	—	$4\frac{5}{16}$	$4\frac{13}{16}$	$5\frac{1}{8}$	—	—

* Nominal.

Yarns.—As might be expected with such a condition of the cotton market as reported above, business in yarns has been exceedingly slow. Spinners have hitherto held the reduction that has taken place in cotton almost entirely in their own hands, manufacturers as yet have scarcely got a fraction of it. Finding it, however, impossible to sell cloth to any extent upon the present quotations of yarn, they are holding aloof—a policy, however, that has produced no more result than to make spinners a little more inclined to listen to fractional reductions from their quotations. But it is not likely that a decline in price can be staved off much longer, as manufacturers are reported to be increasing their stoppages of looms. There is only a slow demand for bundle yarns for the export trade and very few orders are coming to hand from abroad. Bolton yarns are quiet but prices keep steady. Like those of Oldham, Bolton spinners have now a good margin if they could only maintain it for any length of time. In cloth there is little change to report.

Cloth.—There is a moderate enquiry for the principal markets, with the exception of China, but the prices coming along with these are not such as manufacturers are enabled to accept. The lower grades of shirtings are moving only slowly, and the prices offered for them are very unsatisfactory to makers. In the finer qualities of goods for Eastern markets, the demand is only small and not much business is passing. Printing cloths at present are poor work for the manufacturer. For home-trade goods there is only an indifferent enquiry, and few orders are being given out. Coloured woven goods are very dull, and for fustians and velvets there is not much demand. The only satisfactory feature of the market at the moment is the considerable decline in prices, which is a very valuable one, as it gives the assurance that before long it will lead to a considerable increase of sound business.

WOOLLENS AND WORSTEDS.

BRADFORD.

The wool trade is still quiet, buyers of the new clip not having shewn any anxiety to purchase. Quotations, however, are firm, and staplers display no uneasiness. Home-grown wools are only in moderate request; but here also prices are steady. Plain lustres are in moderate request, and holders refuse to make any concessions whatever. There is no improvement in yarns and the new business comes forward very slowly indeed. A variety of small orders for two-folds, tubes, geneppe, and mohair yarns have been offered for export. Single descriptions have been exceedingly quiet. The home-trade spinners are not kept fully occupied, and spinners of two-folds are bringing their machinery to a stand, or else must work to stock. The falling-off in exports of piece goods for the United States during the month of October was exceptionally great, and such as to give grounds for great anxiety to local manufacturers. Every item has suffered.

HUDDERSFIELD.

Buyers from the various distributing centres in England, Scotland, and Ireland have been in the market, but their operations have not been extensive, the desire apparently having been to obtain parcels for sorting-up purposes. Machinery is rather better employed, but the unsatisfactory features of the situation referred to in previous reports are still visible, and they have not been ameliorated much during the week. Repeats do not come in at all freely, and the wet weather has spoiled the good chance there was a short time ago for making up some of the recent losses. The present state of things also seriously affects retail merchants who have stocks, and naturally delays wholesale houses in giving first orders for the ensuing winter. The goods chiefly disposed of are finer qualities of worsteds, serges, and tweeds of the lower qualities. The Continental trade improves but slightly, and the demand for goods for shipment to the United States has fallen away considerably, as the rush is now over. The demand for Canada, however, is in a very satisfactory condition, and merchants are ordering largely of fine and medium goods for the Canadian market. Prices of ordinary goods rule low owing to excessive competition, but they are now pretty well fixed for some time to come. Wools are only fairly in demand locally. Prices are well maintained.

GLASGOW.

Messrs. Ramsey and Co., in their report dated 4th November, say:—

Wool.—The wool market is, if anything, a shade quieter this week. There have been fewer transactions on home account, but a fair demand for export is still experienced. Prices are steady at late quotations.

Sheep Skins.—The supply was up to the average and mostly of good quality. Competition was strong and full rates were made for the majority of lots.

FLAX AND JUTE.

DUNDEE TRADE REPORT.

Wednesday, 5th Nov., 1890.

The market here is more hopeful. Large as the production is, no stocks accumulate, and this week both spinners and manufacturers feel more confident that the bottom has been reached.

Jute is rather firmer in Calcutta, although on the spot the sellers are anxious to prevent the cost of warehousing, and very low prices are taken for jute on the quay.

Flax is unchanged, and is being freely offered.

Brown Petersburg is firm, but for Riga sellers are willing to wire offers slightly under last week's quotations.

Yarns are firmer to-day. Even common cops are a shade better in price, while for the best qualities with colour extreme prices are wanted.

Hessians also are not lower. As orders come in agents place them from hour to hour on the market, and it is felt that these are sufficient to take off the whole production. For fine wide goods with colour makers are very stiff, and to effect business buyers must pay full prices.

There is a fair demand for flax and yarns, which, in some sizes, are indeed rather difficult to buy for early delivery.

Tow yarns are not dearer, but on the contrary heavy wefts continue to be difficult to sell.

Arbroath is well engaged in heavy flax goods. Brechin, Forfar, and especially Fife, are all again full of orders, and insist upon their list prices. Dundee ropes and twines are in excellent demand.

The fancy jute trade is moderately active; every week some new design is being offered, and the trade extends.

HOSIERY AND LACE.

NOTTINGHAM.

Buyers of lace yarns of the finer qualities have done little business, and prices are steady.

Sellers of the coarser kinds have found buyers more difficult to treat with, and occasional concessions have been made. Merino and wool yarns for hosiery are in steady request. There has been a slight improvement in the demand for silks. Cotton bobbin nets and silk tulles have been moving in good quantities, and prices remain as before. Business in the warehouses has improved; several buyers have been in the market, and shipping orders have been placed to a fair extent. Operations in Honiton braids and cotton pearls have not been extensive, and manufacturers of ruchings and frillings are in a poor way. Made-up goods, such as mob-caps and frillings, are slow. There is a steady demand for torchon and Maltese laces, and the reception of the new Erington laces has been fairly encouraging. Moderate orders have been placed for point de Paris laces and insertions, and there is a fair sale for macramé and Guipure laces. The edelweiss laces are not much wanted. Irish crochet trimmings are being disposed of at prices which are barely remunerative. Swiss embroideries and everlasting trimmings are in moderate request. In the silk branches of the trade a few Spanish and Chantilly laces are selling, but the demand has not realised the expectations which were indulged in. Several varieties of silk nets are in fair request. Hosiery, no change.

LEICESTER.

A fairly healthy and firm condition prevails in the wool market, all classes of English wool being well held, and shewing no wavering in prices. Staplers do not press sales, but the aggregate turnover for the week has been a fairly good one. Botany and colonial wools are rather neglected; which state of things will continue until the next sales. In yarns there is a good consumptive demand for worsteds, fingerings, and lambswool yarns, and prices remain very firm; no concessions can be secured. In cashmere and fine yarns a number of special orders have been given out, which suffice to keep machinery generally employed. The activity in the hosiery warehouses has been slightly checked by the mild weather, more especially in plain and fancy goods, but a full season's trade is now assured. In elastic webs, etc., full employment is general, and there is a good demand for home and colonial markets.

DRY GOODS.

MANCHESTER.

There is a feeling of dissatisfaction here owing to the disappointing character of the weather, which has quite disorganised certain departments both of the wholesale and retail trade. The usual range of new goods in the fancy departments has come forward, but the demand displays no special feature of interest. The silk departments are quiet, but the manufacturing end is brisker than has been the case for a long time. Macclesfield could, it is understood, readily furnish employment for two or three hundred additional weavers, the labour for the prompt execution of the orders on hand being insufficient. There is a moderate enquiry for woollens for the ready-made and general trade. Browns have come forward more freely, and greys for the moment have retired into the background. The new French tariff threatens our sewing-silk trade severely, the duties proposed being enormously in excess of those at present levied. Leek and the Yorkshire manufacturers will feel the effects of this change severely, as it is evident that the Paris manufacturers have obtained a hearing from their Government, and mean to make every use of the opportunity now presented them. The linen trade is quiet. Prices are firm, however, and this is the most striking feature of the situation at the present time.

SILK.

LONDON.

Messrs. Durant and Co., in their circular dated the 5th inst., say:—

The past month opened with a very quiet market, little being done till the time of the public sales, when a fair quantity of silk was distributed to home consumers. Since then all has been extremely quiet, the daily doings being of the smallest, and the month closed with a dull market. Our deliveries distinctly mark the cessation of purchases for the Continent.

Arrivals in October.

Bengal	88 bales.
China	1,410 ,,
Japan	— ,,
Canton	476 ,,
Tussah	65 ,,

THURSDAY.—London Produce Clearing House quotations of 5¼ Tsatlee: November 11s. 10d., December 11s. 11d., January 12s., February 12s. 1d., March 12s. 2d., April 12s. 3d., May 12s. 4d. June 12s. 4d. per lb. Sales registered, nil.

THE KIDDERMINSTER CARPET TRADE.

There is no improvement to report in the condition of this trade, at any rate so far as concerns manufacturers of Brussels. Everyone is complaining of lack of business, and it is a long time since things were so quiet at this particular period of the year. The reason for the existing quietude is not, however, very far to seek, and there is no occasion for alarm. Buyers are simply restricting their orders as far as ever possible to absolute requirements, instead of buying as they generally do for the purpose of replenishing their stocks, in the hope that before they are forced to do this prices will be lower. As far as can be seen at present, there is not the slightest likelihood of any giving way on the part of manufacturers, as there is an evident disposition throughout the trade to be content with but partial employment for machinery at the prices as recently fixed, rather than work full swing for little or no remuneration whatever. By reports coming to hand from travellers there is no doubt that a reversion to last season's price-list would very quickly swell the order books, and there need be no longer an idle loom in the trade. As evidence of the determined attitude of manufacturers several have this week commenced to run their works short time.

For cut pile goods the demand still keeps good. In Axminsters several manufacturers speak of pressure. In the wool market there is no apparent change; for some sorts there is rather more competition, but transactions are neither so numerous nor heavy as is generally the case at this time. Values of carpet wools are on the whole maintained, although here and there, where stocks have accumulated, a little giving way has taken place.

Joint Stock and Financial News.

COTTON COMPANIES' REPORTS.

BOUNDARY SPINNING COMPANY (OLDHAM).—Profit for quarter, £500; dividend, 6¼ per cent.

HENSHAW-STREET SPINNING COMPANY (OLDHAM).—Loss on the quarter, £70.

GRIMSHAW LANE SPINNING COMPANY.—Profit for six months, £1,254 1s. 8d. Disposable for dividend, £2,152 18s. 5d. Dividend, 10 per cent. per annum, which will absorb £1,350. Share capital, £27,000. Loans, £14,963. Plant, £32,532, after depreciation of £669 5s. 3d. Loan interest, £150 19s. 2d. Spindles, 48,700 (39,388 T. and 9,312 W.) Company formed 1874.

NEW COMPANIES.

FRASER, MOSS AND CO., LIMITED.

Registered in Scotland by Mr. D. Cockburn, solicitor, Glasgow, its office being at 106, Brunswick-street, there. This company has a capital of £3,000 in £100 shares. Object, to carry on the business of wholesale clothing manufacturers in all its branches, with power to acquire the business and property of any person or company carrying on the business which this company is authorised to carry on; to purchase heritable property, etc. The general board of directors shall consist of five, of whom two shall be managing directors.

DUDLEY MILLS COMPANY, LIMITED.

Registered by Waterlow Brothers and Layton, Limited, 24 and 25, Birchin-lane, E.C., with a capital of £30,000 in £5 shares. Object, to carry on the business of cotton spinners and manufacturers, etc., as now carried on by Messrs. Wood and Brearley, at Miller's Dale Mills, Derbyshire, and Jas. Wilson, under the style of Wilson and Sons, at Limefield Mill, Farnworth, Lancashire, and at 15, Palace-street, Manchester. The first subscribers are:—

	Shares.
J. Wilson, 24, Chambres-road, Southport	1
T. P. Brearley, Lytton Mills, Manchester	1
E. Wilson, Eccles	1
E. Stocker, Eccles	1
T. H. Brown, Radcliffe-road, Bolton	1
J. W. Brown, Radcliffe-road, Bolton	1
G. W. Wilson, Eccles	1

There shall not be less than three nor more than five directors. The first are the first five signatories to the memorandum of association. Qualification, £250.

JOHN STANNING AND SON, LIMITED.

Registered on the 5th inst., with a capital of £100,000, in 10,000 in shares of £10 each, to take over and carry on the business of John Stanning and Son, Shrogg's Bleachworks, Leyland, as bleachers, finishers, and dyers. The subscribers to the memorandum and articles are: John Stanning, Leyland, bleacher; Harriet S. Stanning, Leyland; J. H. Stanning, Leigh; J. E. P. Mosley, Ashburne, lieut.-colonel; J. W. Makant, Gilnow, bleacher; John Harwood, Bolton, cotton spinner; George Hesketh, Astley Bridge, cotton spinner; Charles W. Rawlinson, Kensington, solicitor. The number of directors is not to be less than three nor more than five. The first directors are Messrs. John Stanning, J. W. Makant, and George Hesketh. We understand that the shares are not offered to the public.

THE UNITED ALKALI COMPANY, LIMITED.

Registered by H. Forshaw and Hawkins, 5, Castle-street, Liverpool, with a capital of £6,000,000 in 300,000 preference and 300,000 ordinary shares of £10 each. Object, to carry on business as manufacturers of chemical products and drugs of all kinds, and in all branches of such business; to carry on business as colliery owners and rock salt proprietors, miners, brine owners, and white salt manufacturers; to carry on business as dyers, drysalters and manufacturers of dyes, stains, colours, varnishes, paints, and pigments; to carry on business as manufacturers of manure, soap, paper-pulp, paper, glass, bricks, pottery, terra-cotta, and sanitary and disinfecting preparations, coke, cement, and artificial stone; to carry on business as waterproofers, india-rubber and leather manufacturers; to carry on business as millwrights, makers of locomotive engines, wagons and rolling-stock, stone and limestone quarry proprietors, lime burners, owners of mines of all descriptions, and winners and workers of minerals and mineral oils, and the business of preparing mineral substances for sale or for treatment in manufacturing processes; to carry on business as metallurgists in all its branches; to manufacture and supply gas to the property of the company or the neighbourhood, and in connection therewith, to carry on the business of a gasworks company; to carry on any business directly or indirectly connected with the generation, accumulation, distribution, supply or application of electricity. The first subscribers are:—

	Shares.
J. Brock, Widnes	1
H. Gaskell, Widnes	1
J. K. Huntley, Flint	1
C. Wigg, Liverpool	1
J. H. Dennis, Liverpool	1
A. W. Allhusen, Gateshead, Durham	1
J. E. Davidson, Newcastle-upon-Tyne	1
C. E. Barlow, Widnes	1
J. C. Stevenson, M.P., South Shields	1
J. Tennant, Saltwell, Gateshead	1
G. L. Wigg, Runcorn	1
P. J. Worsley, Bristol	1
J. A. E. Rayner, St. Helens	1
E. K. Muspratt, Dale-street, Liverpool	1
W. J. Menzies, St. Helens	1
H. Gaskell, junr., Widnes	1
R. Shaw, Widnes	1

The preference shares in the initial capital of the company shall confer on the holders the right to a fixed cumulative preferential dividend of 7 per cent., and such shares will rank, both as regards dividend and capital, in priority to the ordinary shares. There shall be an honorary president of the company and four honorary vice-presidents. Sir Chas. Tennant, Bart., shall be the first honorary president, and Sir Edward Sullivan, Bart., Holbrook Gaskell, John K. Huntley, and James Hawke Dennis vice-presidents. The qualification of every such officer shall be the holding of £5,000 shares in the company. These honorary officers shall ex-officio be directors of the company. Until otherwise determined, there shall not be less than 9 nor more than 20 directors, exclusive of the ex-officio directors above-mentioned, and exclusive of managing directors. The first are John Brock, chairman; Charles Wigg, vice-chairman; J. C. Stevenson, M.P., vice-chairman; Thomas Alexander, Glasgow; A. Allhusen, C. E. Barlow, E. Baxter, J. E. Davidson, H. Gaskell, jun., James Gaskell, W. J. Menzies, E. K. Muspratt, G. Pilkington, J. A. E. Rayner, R. Shaw, James Tennant, G. L. Wigg, and P. J. Worsley. Qualification, £1,000. Remuneration: Chairman, £2,500, with further £500 after 8 per cent. dividend on the ordinary shares; remuneration of each of the other directors, £400, one-half of which shall be paid irrespective of his number of attendances at Board meetings, and the remainder to be decided at the end of the year, according to the number of their respective attendances.

Gazette News.

ADJUDICATIONS.

John A. Holt, late Park-place, Leeds, late cloth merchant.

RECEIVING ORDERS.

Egdar Waugh, Duke-street Mansions, Grosvenor-square, London, carpet manufacturer; London.

John Birkenshaw, Cawood Yard, Leeds, rag dealer; Leeds.

James Prescott, Stevenson-square, Manchester, commission agent; Manchester.

John Holt, Ben Rhydding, cloth merchant; Leeds.

NOTICES OF DIVIDENDS.

H. Marriott, Hill Side, Brownhill, Batley, trading at Smithier, Birstal, manufacturer and commission weaver; 4d., second and final.

PARTNERSHIPS DISSOLVED.

Addy, Horsfall and Co., Huddersfied, yarn spinners and combers.

John Kitson and Sons, Canal-road, Bradford, reed and heald machine makers

T. E. and R. Whitaker, High Pavement, Nottingham, lace manufacturers.

J. B. Clarke and Co., Exchange Alley, Chapel-street, Liverpool, cotton brokers.

Smith, Edwards, and Co., Chapel-street, Liverpool, cotton brokers; Robert Grahame retiring.

Patents.

APPLICATIONS FOR PATENTS.

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

Where Complete Specification accompanies Application an asterisk is suffixed.

27TH OCTOBER TO 1ST NOVEMBER.

17,137. H. Lister, Market Place, Huddersfield. Machinery for scouring, dyeing, and drying hanks of yarn.

17,168. J. Y. Johnson, 47, Lincoln's Inn Fields. London. Sulpho acids of a red basic naphthaline colouring matter. (*Badische Anilin and Soda Fabrik, Germany.*)

17,169. R. Sim and A. B. Sim, 45, Southampton Buildings, London. Knitted drawers.

17,175. C. Shales, 53, Chancery-lane, London. A new fabric.

17,177. P. V. Renard, 53, Chancery-lane, London. Machinery and process for ornamenting fabrics.

17,193. J. Stead, 20, Charles-street, Bradford. Shuttles for looms.

17,195. D. Dawson, Market Place, Huddersfield. Blue colouring matters.

17,196. R. Taylor and B. Sykes, Commercial-street, Halifax. Woollen condensers.

17,239. A. Werrth, 18, Buckingham-street, Strand, London. Gearing and ungearing of machine belting.

17,270. C. W. Model, Temple Chambers, London. Hardening the surface of mangles, calenders, rollers, etc.

17,326. C. D. Abel, 28, Southampton Buildings London. Dyeing textile materials of all kinds in the hyposulphite vat. (*M. M. Rotten*, Germany.)

17,342. B. Tettweiler, 6, Lord-street, Liverpool. Fabrics composed mainly of fibrous material.

17,345. H. Calvert and J. Binns, 8, Quality Court, London. Preparing or gill boxes for combing and drawing wool, etc.

17,387. A. J. Brook, 76, Chancery-lane, London. Twisting machinery for gimp twine.*

17,404. W. R. Bowker, 4, Fairmont-terrace, St. Paul's-road, Preston. Weft fork stop-motion for looms.*

17,406. W. Ireland, 62, St. Vincent-street, Glasgow. Manufacture of fishing nets and machinery therefor.

17,419. H. Sutcliffe, Grange Mills, Mytholmroyd. Automatic locking motion for cotton and cotton waste, slubbing, intermediate, roving, and jack frames.

17,429. A. Rutherford and A. Roylance, 6, Bank-street, Manchester. Shuttles for looms.

17,458. J. Hope, Junr., 45, Southampton Buildings, London. Machines for engraving the surface of cylinders for calico printing, preparatory to etching same.

17,469. A. Grupe, 53, Chancery-lane, London. Product suitable for the manufacture of floor cloth, process of preparing same, partly applicable to the manufacture of linoleum.

17,485. C. U. Piat and J. A. Pierrel, 45, Southampton Buildings, London. Warp rollers or beams.

17,495. J. P. Baily, 18, Fulham-place, Paddington, London. Loom-shuttle threader. (*B. Harris, U.S.*)

17,510. J. South, 8, Quality Court, London. Picking motions.

17,528. J. Shires, 3, Commercial-street, Halifax. Rubber used in woollen condensers.

17,530. F. Preston, 17, St. Ann's Square, Manchester. Machines for stamping, printing, or embossing woven fabrics, etc.

17,531. R. W. Thom, 17, St. Ann's Square Manchester. Backing or back-starching and finishing textile fabrics.

17,538. C. A. Colin, 87, St. Vincent-street, Glasgow. Obtaining colouring matters.

17,564. C. C. Longridge, 53, Chancery-lane, London. Shearing machines.

SPECIFICATIONS PUBLISHED.

1889.

16,509. Mann. Cutting pile fabrics. 6d.
16,953. Lake (*Lacey*). Looms. 11d.
17,683. Stott. Winding warps into balls. 11d.
17,786. Sykes and ors. Feeding wire to card setting machines. 8d.
19,598. Woodward, L. and C. R. Ribbed knitted fabrics. 8d.
19,757. Haworth and Walmsley. Beaming and balling warps. 6d.
19,798. Lister. Finishing pile fabrics. 4d.
19,863. Corron. Treating textile fabrics. 8d.
19,913. Jackson. Belt fasteners. 8d.
20,386. Pilard. Treating wool. 8d.

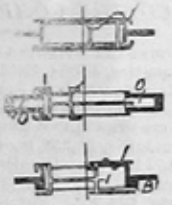
1890.

11,580. Marriott. Black dyeing. 4d.

ABSTRACTS OF SPECIFICATIONS.

8,650. May 24, 1889. **Spinning.** J. Hargreaves, 868, Derby-street, and E. Gillow, 2, Raby-street, both of Bolton.

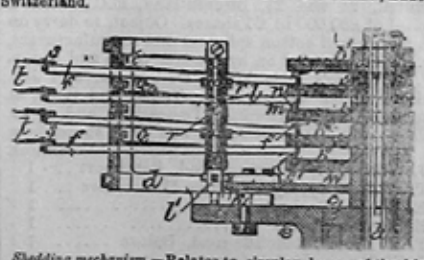
Rings and travellers.—Several forms of traveller are described, three of which are shewn, the traveller taking across the ring and bearing against the spindle or cop. The rings may be provided with guide surfaces B1 or an annular chamber c for the traveller. The yarn may be threaded once or twice through the traveller; in the former case it takes only over the eye I, and in the latter, the course shewn in the drawing. 8½d.



8,673. May 24, 1889. **Dyes.** B. Willcox, 47, Lincoln's-Inn-Fields, Middlesex.—(*The Farbenfabriken vorm. Friedrich Bayer and Co.; Elberfeld, Germany.*)

Relates to the preparation of colouring matters, and of leuco-bases employed therein, by combining *m*-amidophenol, or its alkylised derivatives, or hydroxydiphenylamine, or the salts thereof, with various other bodies. Leuco-bases of the triphenylmethane series are prepared by melting the above substances with benzaldehyde, or a nitro-, amido-, alkylamido-, hydroxy-, or chloro derivative thereof, in the presence of dehydrating agents, such as zinc chloride or concentrated sulphuric acid. Red dye-stuffs are obtained (1) from those leuco-bases by further heating with dehydrating agents; (2) by heating methylene chloride, bromide, or iodide, acetone, or chloroform, with two molecules, or benzil, or a nitro-benzil, with four molecules, of an alkylised *m*-amido-phenol, or a salt thereof, with or without a condensing agent; (3) by treating dialkyl-*m*-amidophenols under pressure with carbon oxychloride at about 100° C., and the resulting dihydroxytetralkyldiamidobenzophenones with dehydrating agents; and (4) by heating formaldehyde, acetaldehyde (paraldehyde), unsymmetrical diphenyltrichlorethane, unsymmetrical diphenyldichlorethylene, benzal chloride, benzotrichloride, formic acid, or a mixture of glycerine and oxalic acid, with alkylised *m*-amidophenol, or its salts, with or without condensing agents. 8½d.

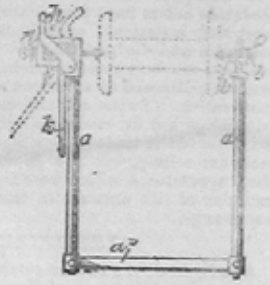
8,676. May 24, 1889. **Looms.** G. Wassermann, Baden, Switzerland.



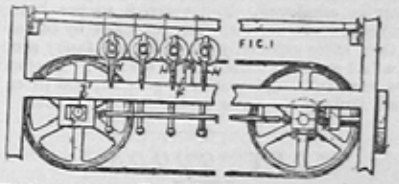
Shedding mechanism.—Relates to circular looms of the kind described in Specification No. 13,533, A.D. 1884, and to other looms. The warp threads pass through eyes in groups of steel healds or leashes *t*, the rectangular heads of which are pushed into and held in grooves in sheet steel spring sheaths or shafts *s*; this arrangement may be modified. The shafts are fixed alternately above and below to radial rods *f* passing through guide frames *d*, which are mounted on a disc *e* on the hollow pillar *c*. Projections *f*1 on the rods enter grooves *m*, *n* in the tappets *b*1 . . . . *b*5 on the central shaft *a*. The cam groove correspond at one point, viz., that at which the shed is closed at the left-hand side of the figure, and at this point the rods *f* may be lifted or not, to engage in a groove above or below by the action of cylindrical segments on a series of pattern rollers *l*, and of springs *o*. The rollers *l* are turned in succession by a projection *k* on a disc *u* carried by the shaft *v*, the polygonal portions *l*1 locking against the disc when the projection has passed. The arrangements may be modified to suit ordinary looms. 8½d.

8,681. May 24, 1889. **Spinning.** H. H. Lake, Southamp on Buildings, Middlesex.—(*W. H. Goldsmith, 29, Dorfee Avenue, Fall River, and J. S. Wright, Cedar Avenue, Duxbury, both in Massachusetts, U.S.A.*)

Bobbin or spool holders for winding machines are formed of two upright bars *a*, *a*1, having a cross-bar *a*2, which may be detachable and arranged so that the bars may be adjusted vertically with regard to one another. One arm carries the centre *b*, which may be adjustable vertically as well as laterally, and the other carries a loose centre *d*, which is pressed forward by a spring *f*, and may be withdrawn by a handle. It is prevented from turning by any suitable means. The whole slides vertically in suitable guides as the winding takes place; *s* is a latch for supporting the holder in its highest position for the removal of the bobbins, etc. The invention may be applied to drum winders and other winding machines. It is also described as applied to a machine in which the bobbins are driven by a belt. 8½d.



8,682. May 24, 1889. **Spinning.** H. H. Lake, Southampton Buildings, Middlesex.—(*W. H. Goldsmith; 29, Dorfee Avenue, Fall River, and J. S. Wright; Cedar Avenue, Duxbury, both in Massachusetts, U.S.A.*)



Winding machines.—The bobbins upon which the yarn is wound are driven by means of an endless belt or band. The parts may be arranged variously. The bobbins are shewn as carried by vertically sliding holders H and resting upon the band, the width of the latter being preferably slightly less than the distance between the inner faces of the bobbin heads. The bobbin may be supported out of contact with the band by means of a trip latch. The shaft *b*1 of one of the pulleys is mounted in adjustable boxes, in order that the stretch of the band may be taken up, and the band may be supported by pulleys *f* to prevent sagging. The capacity of the machine may be doubled by arranging a second band supporting a second series of bobbins, parallel to the first, the same traverse mechanism, etc., being used for both. The band may also be arranged vertically instead of horizontally, the bobbins being, in this case, pressed latterly against both stretches of the band. 8½d.

8,683. May 24, 1889. **Spinning.** H. H. Lake, Southamp on Buildings, Middlesex.—(*W. H. Goldsmith; 29, Dorfee Avenue, Fall River, and J. S. Wright; Cedar Avenue, Duxbury, both in Massachusetts, U.S.A.*)

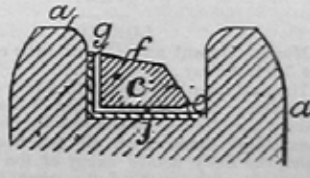
Winding and spooling yarns.—Traverse bar rests by means of rollers, on guide ways, and is connected by one or more arms to a rocking shaft, which is operated by a cam through a sliding rod, adjustable connecting rod, and adjustable arm. 8½d. *Drawings.*

8,688. May 24, 1889. **Looms.** C. S. Brooks, Zetland Mills, and E. Beaumont, Newsome-road, both of Huddersfield.

Picking mechanism.—In underpick looms the picking strap is replaced by a bent steel or other metal bar, which is connected by means of loops of leather or hide and bolts and nuts to the picking stick and picking lever. 6½d. *Drawings.*

8,693. May 24, 1889. **Looms.** J. C. Fell, 1, Queen Victoria-street, London.—(*H. Kelly, Biddeford, Maine, U.S.A., and M. H. Kelly, Taco, Maine, U.S.A.*)

Shuttles.—The thread *f*, on its way to the eye of the shuttle *a*, passes beneath a tension weight *c*, which is pivoted at *f* and is formed with a free double-bevelled end *e* to make it self threading. The weight may be arranged in a clasp *g* formed with side ears. 6½d.



8,750. May 27, 1889. **Dyes.** B. Willcox, 47, Lincoln's-Inn-Fields, Middlesex.—(*Farbenfabriken vormals Friedrich Bayer and Co., Elberfeld, Germany.*)

Relates to the manufacture of blue basic colouring matters. Consists in melting together the azo compounds resulting from the combination of diazobenzene, diazotoluene, diazoxylene, diazonaphthalene, tetrazodiphenyl, or tetrazoditolyl, or the sulpho acids thereof, and metahydroxy-mono-, or di-ethyl-aniline, or metahydroxy-mono-, or di-methyl aniline, with

α-naphthylamine, or the mono-, or di-, methyl or ethyl derivatives thereof in the presence of a solvent, such as dimethylaniline, alpha or beta-naphthylamine or glycerine, at 180° to 200° C. Consists also in melting together the azo compounds, resulting from the combination of the above diazo or tetrazo compounds and naphthylamine and its derivatives above-mentioned. In these processes the azo compounds splits off a molecule of an amine or amidosulpho acid. For example, benzene-azo-meta-hydroxydimethylaniline, hydrochloric acid, and hydrochloride of alpha-naphthylamine are stirred into a paste with glycerine and gradually heated to 160°—165° C. When the water has distilled off the melt becomes thick and brown to blackish green, but subsequently it becomes thin and of a blue colour, evolution of gas taking place, after which the colouring matter separates in lustrous green crystalline laminæ. The hydrochlorate is sparingly soluble in cold water, but the sulphate is readily soluble in hot water. 8½d.

8,758. May 27, 1889. **Driving belts and hose pipes.** C. A. Cox, 26, St. Helen's-road, Swansea, and F. G. S. Ham, 24, Southbrook-road, Lee, Kent.

Woven from the fibre of ramie, rhea, or china grass, with or without cotton, hemp, flax, silk jute, wool, etc. The belts and pipes may be coated with paint, varnish, india-rubber, etc. 4½d.

8,881. May 28, 1889. **Knitting.** A. F. Longdon, Agard-street, Derby.

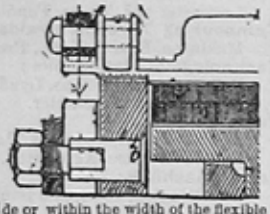
Parallel machines.—Surgical elastic fabric is produced by inserting an india-rubber or elastic cord at every course in the following manner. An additional thread-carrier is mounted on a sliding rod, supported by brackets on the slide of the ordinary thread-carrier, which passes through a frame-work part of the additional thread carrier. The elastic cord is laid without tension between the bits when the needles are down, and the ordinary thread is then laid in the usual manner. 8½d. *Drawings.*

8,887. May 29, 1889. **Spinning.** A. W. Montgomery, Universality Buildings, Washington Square East, New York, U.S.A.

Heckling machines.—The hemp, etc., when fed into the machine, is pierced by teeth mounted upon bars carried by a revolving drum, and is carried forward and held thereby while being combed or heckled by teeth mounted on a travelling chain. The delivery rollers are driven slightly faster than the chain, the fibre being thereby drawn through the pins, and further combed before being delivered from the machine. 8½d. *Drawings.*

8,930. May 29, 1889. **Spinning.** J. M. Hetherington, Vulcan Works, Pollard-street, Manchester.

Carding engines.—In order to prevent the flats from being bent by the chains towards the cylinder in carding engines in which the flexible bends *b* are brought close to the ends of the cylinder, the flats are lengthened and arranged so that the strain due to the weight of the chains *f* shall pass outside or within the width of the flexible bends. The usual guiding recesses on the flat are dispensed with and flanged pulleys employed for guiding the flats and adjusting them laterally, the flats being provided with suitable bearing surfaces, which may be arranged variously. 1s.



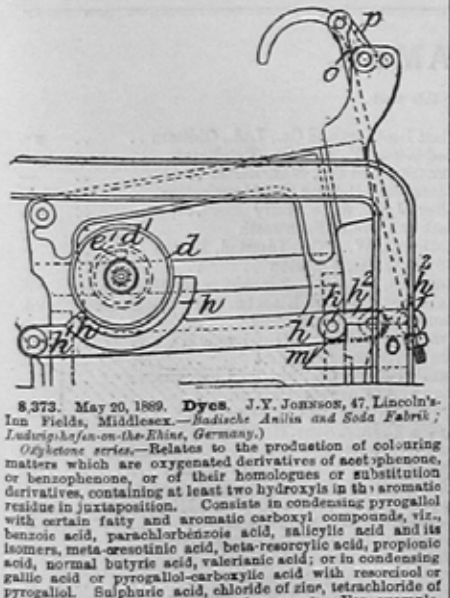
8,951. May 29, 1889. **Ropes.** M. H. Tomkins, Pier Cordage Works, Millwall, Middlesex.

Strands for the manufacture of ropes, etc., are made of a core of European hemp overlaid with Manilla hemp. On the way to the twisting machine the various yarns are passed through perforations in two guide-plates placed at a suitable distance apart. In one plate the holes are in parallel lines, whilst in the other they are in concentric circles. 8½d. *Drawings to Specification.*

9,057. May 31, 1889. **Looms.** J. Elsas and H. Weissenburger, Cannstatt, Germany.

Shuttles.—The shuttle is made in nine parts, viz., two longitudinal pieces, two holders, two points, two cramps screwing into the points *s*, and a spindle. One cramp serves as a socket for the spindle, and to its underside is attached a spring bearing on the spindle. 6½d. *Drawings.*

8,407. May 21, 1889. **Spinning.** J. R. Wain, 28, Oxford-grove, Oxford-road, Manchester.



8,373. May 20, 1889. **Dyes.** J. Y. Johnson, 47, Lincoln's-Inn Fields, Middlesex.—(*Badische Anilin and Soda Fabrik; Ludwigshafen-on-the-Rhine, Germany.*)

Oxyketone series.—Relates to the production of colouring matters which are oxygenated derivatives of acetophenone, or benzophenone, or of their homologues or substitution or benzophenone, or of their homologues or substitution derivatives, containing at least two hydroxyls in the aromatic residue in juxtaposition. Consists in condensing pyrogallol with certain fatty and aromatic carboxyl compounds, viz., benzoic acid, parachlorbenzoic acid, salicylic acid and its isomers, meta-oresotinic acid, beta-resorcylic acid, propionic acid, normal butyric acid, valerianic acid; or in condensing gallic acid or pyrogallol-carboxylic acid with resorcinol or pyrogallol. Sulphuric acid, chloride of zinc, tetrachloride of tin, etc., are used as condensing agents. For example, trioxybenzophenone is prepared by heating pyrogallol and benzoic acid to 140° C. and gradually stirring in chloride of zinc. The product is crystallised from boiling water. It is very slightly soluble in cold water, but readily in alcohol, ether, acetone, and glacial acid, and dyes cotton mordanted with alumina a golden yellow colour, with iron an olive colour, and when printed with alumina and tin a bright yellow colour. These colours are said to be as fast as alizarine dyes. [6½d.]

8,395. May 21, 1889. **Pulley coverings.** A. S. Davies, Port Deposit, Maryland, U.S.A.

A band or backing of loosely woven jute or cotton fabric has on one side a facing of elastic material, such as a composition of ground cork and boiled oil, together with smaller proportions of paper pulp, wood pulp, sawdust, fibrous matter, india-rubber, or other vegetable gums, applied while hot and in a plastic state, and on the other a coating of cement soluble in water. These bands are placed in the market ready for being applied to the pulleys, for which purpose their cemented sides have to be wetted. The pulleys may first be covered with a cement-coated strip of muslin, on which the elastic band is secured. [6½d. *Drawings to Specification.*]

Mules and Twiners.—To assist the stopping of the tin roller previous to backing-off, a brake *h* is provided which, as the carriage approaches the end of the stretch, is brought into action by means of an incline *m* on the frame, which is engaged by a friction roller *k* on the lever *h*¹ on which the brake is mounted. The brake takes against the periphery of a drum *d* mounted loosely on a boss keyed to the shaft, and provided with a stud *e*¹, which takes against a stud *d*¹ on the drum. The drum is kept in place by a spring washer and nut. The tin roller can rotate backwards for backing-off for about three-quarters of a revolution; but if this is not sufficient, the brake may be released during the backing-off by means of a lever arrangement h_2, *o*, *p*, connecting the lever h^1 with the faller shaft, the roller *k* being in this case mounted on the shaft h_2. [6½d.]

8,410. May 21, 1889. **Spinning.** P. Wallace, Berry Brow, near Huddersfield.

Spindles and their appurtenances.—The yarn is wound in the form of a cop upon a loose sleeve, which is connected to the lifting rail by means of a stud, collar, and washer, the stud taking through a longitudinal slot in a surrounding tube. The wharve drives both the spindle and the tube, the latter being provided at its upper end with a conical cup, the edge of which is flanged to receive a traveller, provided with a wing, which, through the resistance of the air, acts as a drag upon it. The cop is wound with its nose downwards. If it is desired to wind the cop in the ordinary manner, the tube is made of the same diameter as the edge of the conical cup, the latter being in this case dispensed with. [8½d. *Drawings.*]

8,413. May 21, 1889. **Stretching fabrics.** J. Wadsworth, 3, Hawthorn-view, Levenshulme, and J. Haddow, 7, Barlow-terrace, Manchester.

The fabric is passed between two corrugated or ribbed rollers, preferably built up of rings of brass, iron, wood, earthenware, vulcanised caoutchouc or other suitable material, and forced towards each other by an adjustable pressure. The rollers may be tapered towards the middle, or the rings or ribs may be closer together towards the ends. The ribs may be helical, in which case the rollers would be geared together, or one roller may act in conjunction with a fixed grooved bar, roller, or surface. The rollers may be driven by the fabric, or one or both may be driven positively. [8½d. *Drawings.*]

8,481. May 22, 1889. **Dressing or Beaming Warps.** W. C. Hargreaves, W. Jackson, Sons and Co., New Hall Mill, Burnley.

The warp is composed of several sections A, B . . . . in each of which a lease is taken. Two or more threads to form a split are taken from each section and drawn through the first space of the raddle, as in Fig. 4. From the raddle the threads from section A are drafted into the first space of the reed, those from section B into the next space, and so on, as in Fig. 5. The several sections of warp are levelled by passing through rollers on their way to the beam, the warp being struck by a comb on to which a cap is afterwards fitted. Entanglement of the threads is thus avoided. The splits may be first drafted into the spaces of the reed and then into those of the raddle. [8½d.]

8,498. May 22, 1889. **Looms.** F. H. Wilke, 63, Athol-road, Bradford.

For weaving simultaneously several different fabrics the loom is constructed with upper and lower rooms or storeys, each divided vertically into compartments. The lower compartments contain the warp beams and take-up rollers for the respective fabrics, and the shafting and pulleys from which the loom driving-pulleys are operated: the weaving takes place in the upper compartments. The frame sides are connected together (and with other looms, if desired), by upper and lower stays, the upper stays forming a floor or stand for the attendant.

For *letting-off* the warps from one to four warp beams may be employed, the threads from which pass over guide rods to the upper compartments. Spur wheels on the beam flanges gear with pinions on brake pulleys, around each of which is wound a brake-cord, carrying a weight at one end, and attached at the other to a weighted pivoted lever engaging with ratchet teeth on the pulley; as the warp unwinds, the first-mentioned weight rises until the lever clears the ratchet teeth, whereupon the card slips and the weight and lever resume their first positions.

The *healds* have one upper metal shaft only, covered with soft material, and encased in a metal jacket, the leashes being weighted by lingoes.

For *shedding*, the shafts rest on end supports pivoted to toothed segment levers, geared together in pairs, which are coupled to long rods s_1, themselves connected to segment levers a_2 operated from the dobby or other shedding levers at each side of the loom.

Each *dobby* consists of a longitudinally slotted tube in which fit the circular recessed ends e_2 of the levers c_2, connected by cords b_2 with the levers a_2. Wires g_2, sliding in the levers c_2, and operated through levers h_2 from the pattern cards, set the hooks f_2 in or out of the way of knives carried by cam-worked frames, also mounted in the slotted tube. The pattern-cylinder is worked by rods from eccentrics on the main shaft in the upper part of the loom. The Provisional Specification describes a modification, in which the levers c_2 are worked from tappets removably mounted on their shaft.

The *lay* rocks on a shaft in the basement, and the shuttle races are of sheet metal, one above the other, each serving for half of the fabrics.

For *beating-up* the lay is operated by a rod, in the grooved end of which works a pin on a wheel driven from a wheel on the main shaft, a considerable dwell occurring during picking.

For *picking*, along each race two long rods are employed, extending across the loom and carrying tongues for pushing the shuttles through the shed, and operated by cords from pulleys rocked by connection with cam-worked levers.

The *shuttles* are made much wider than usual, and the wefts are wound upon reels with deep flanges. Each shuttle may contain one or more reels, the threads from which are guided through eyes and tubes, so as to lie stretched in front of an opening in the shuttle, tension being maintained by an angle plate and spring.

In the *weft-stop motion* as many weft-forks are employed as there are reels, their hooked ends carrying light pieces of material for touching the wefts in the shuttles. All the forks move with a rocking lever acting through disengaging shafts on a spring-handle from which a clutch, of the nature described in the next paragraph, is operated for stopping the loom upon the breakage of the weft.

In the *take-up* mechanism the fabrics pass around four roughened beams turned by ratchet-wheels and weighted cam-worked pawl levers; from thence they pass to a similarly driven cloth beam.

The Provisional Specification describes *change-box mechanism*, in which a specially constructed and driven tappet chain operates the various sets of boxes; or separate chains are employed for the different compartments.

For *polishing* the fabrics in the looms roughened rollers are provided on the breast beams.

Clutches.—A disc keyed on the shaft carries radial levers, operated from a sliding sleeve so that their ends may come into frictional contact with the inner surface of a loose belt pulley, and be slowly turned thereby until projections on the latter impart positive motion to the said disc and shaft. [1s. 4d.]

8,571. May 23, 1889. **Figured Cloth.** J. B. Hodgkinson, Hilton Mills, Bridgeman-street, Bolton.

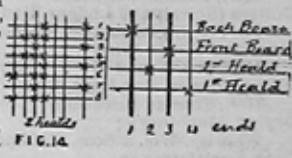


FIG. 14.

Figured cloth, such as quilts, quiltings, curtains, vestings, table covers, toilet covers, toilet mats, towels, etc., are woven with a satin or tabby ground, and raised or embossed figured figures, or a satin figure and a figured ground by employing from two to eight healds. The stitching yarn may be interwoven into the embossed or raised part. To perform this the cards are cut solid for the ground part, and tabby for the figure part. The fabric may consist of two separate cloths, one of which is brought to the face to form figure, and is fastened to the other only where it passes through to the back. Two different effects upon the figured part may be produced by the weft or wefts, viz., an embossed figured figure, and a wavy or gauze effect. By means of different colours of coarse wefts a tapestry effect upon a satin or calico ground may be produced. The fabrics can be woven one pick fine and one pick coarse, two picks fine and two coarse, or two and one, or with other changes of picking. When woven with a jacquard, or with a jacquard and healds, two or more comber boards are employed for lifting the ground yarn. The yarn may be drawn with one or more face and back ends in each dent of the reed. Each jacquard hook is connected to one or more ends by tying the harness from two or more comber boards to the same hook. The method of working the jacquard, two healds, and two comber boards for producing a cloth having a satin ground and a bag-cloth figure, is shown in Fig. 14; the draft for the same is also shown. In the draft, the back ends are shown as thick lines, and the face ends as fine lines, the round may be extended to sixteen or more picks, if desired. Various methods of weaving the cloths are described. [1s.]

8,583. May 23, 1889. **Boiler preservative and lubricant.** J. Parsons, Bilston Green, Cinderford near Newham, Gloucestershire.

A composition of the following ingredients, viz., coal-tar, vegetable oil, mineral oil (black brick oil), paraffin, petroleum, common soda, soda ash, dry soap, and engine tallow, is applied to the internal surfaces of boilers. Owing to the volatile nature of the composition it is gradually carried over by the steam to the engine, where it acts as a lubricant. [4½d.]

8,585. May 23, 1889. **Pile fabrics.** W. and M. Pullen, Lower Cote, Fixby, near Rastric, Yorkshire.

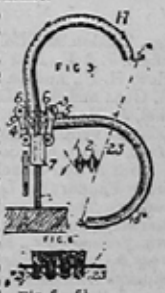


FIG. 5.

FIG. 6.

Relates to improvements in the apparatus described in Specification No. 11,232, A.D. 1888, for tying and securing loops or pile to a foundation fabric, the loops being afterwards cut, if desired. Sickle-formed guides 16, 17 (Fig. 5), for tying threads 23, drawn from suitable bobbins, are mounted respectively on a shaft 4 and on a tube 3 surrounding the latter. The shaft and tube are partly rotated in opposite directions by link mechanism 5, 6, from a slide 7 operated from the driving shaft, or by other suitable mechanism. In this way the threads 23 are carried alternately above and below and through the loops formed by the needles 1 and loop holder 2, at the back of the fabric, whereby the loops are bound together as shewn in Fig. 6. 6½.

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