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RATIFICATION OF DRAFT AGREEMENT FOR SETTLEMENT OF THE STRIKE.

Yesterday morning the Executive Council of
the Operative Spinners' Association met to
consider the terms agreed upon by their repre-
sentatives along with those of the Employers at
Thursday's Conference. After some discussion
it was agreed to adhere to them. The Execu-
tive Council of the Employers' Federation also
met after 'Change hours, and after a discussion
of some duration it was decided to ratify them.
Thus for the present peace is established. But
a great deal of adverse opinion has been ex-
pressed on 'Change. Also it is rumoured that
it is being opposed by the operatives in Oldham.

JUGGLING IN COTTON.

"It appears," says the *Manchester Guardian*,
"that, notwithstanding the extraordinary delay
which has occurred in the publication of the
census statistics of the acreage under cotton in
the United States in 1889, the figures are not to
be trusted. The statistics were published on
April 5, and shortly afterwards Messrs. Henry
Hentz and Co. made certain enquiries at the
Census Office at Washington respecting the
cotton acreage of Texas. The reply acknow-
ledged that in order to prevent further delay the
Census authorities had to some extent 'esti-
mated' the Texas acreage, and that they had
since discovered that the actual area under
cotton was 'considerably ahead of the figures
given on the 5th inst.' Commenting upon this
discovery, the *New York Commercial Chronicle*
says:—'We have heretofore purposely refrained
from commenting on the Census Bulletin, as it
seemed certain to us that the figures, especially
the total of acreage, were incomplete and would
necessarily be revised.' We (*The Textile Mercury*)
beg to observe that it was upon these ancient
figures that Liverpool found sufficient ground to
justify an advance of prices, to which we ex-
pressed a demurrer at the time. And lo! now
it is found that they are incorrect. Really
cotton buyers are very easily befooled people,
or they would examine the pretexts put forward
by cotton sellers as the basis of the advances
they demand, with a little more care. It is
quite time the trade began to do this, and ceased
being the victims of such commercial card-
sharpping. On Monday last another frivolous
pretext for sending prices up was advanced in
the statement telegraphed from New York that
Bradstreet's has estimated, for it can be nothing
more than an estimate, and a crude one at that,
that the present season's planting will be
deficient from the last about 20 to 25 per cent.
And this guess was esteemed of far greater
moment in sending up cotton prices than the
facts that there is now in the Liverpool cotton
warehouses a stock of about 1,750,000 bales;
that nearly all our mills have very considerable
quantities in the mill warehouses; and that
nearly one half of the spindles of the cotton
manufacturing districts are or soon will be
totally or partially stopped. Really the people
of New York and Liverpool are wonderfully
sanguine in their dispositions, for we find in a
Liverpool cotton report in one of our local con-
temporaries the statement that:—"If the statis-
tics published by *Bradstreet's* on this acreage
question are anything like correct, then the
position of cotton at present values is a very
strong one, and there is room for a substantial
rise in values; but, unfortunately, we shall not
be in a position to judge of the truth or other-
wise of these reports for some months to come,

and in the meantime the enormous stocks of
cotton all over the world are more than sufficient
to prevent prices running away very far on the
upward track." Throughout the whole season
nothing has been able to damp the sanguine
belief of the gentleman who supplies this report
that cotton would go up. But some people are
difficult to convince, and when they persist long
enough they are sure to be right some time, as
a rise in prices will come round just as does a
comet in its elongated orbit, only it is sometimes
weary waiting for it.

THE EXPORT PRINT TRADE AND ITS CHANGES.

The Mantalins of the flannel industry, who
have complained for so many years that their
business was going to the "demnition bow-
bows," must have been surprised at the figures
we gave last week as to the course of the
foreign trade since the early part of the present
century. After what has been said during the
past few years, it is indeed surprising to learn
from a careful examination of the official
returns, that quite recently the sales of flannels
abroad exceeded in quantity those during any
previous period of similar duration. Average
prices are, of course, lower, but so is cost of
production. Without taking the ground that
profits are otherwise than unsatisfactory, it may
at least be said that the facts presented by us
last week did not confirm the views which
some, actively connected with the flannel
business, had formed. A similar examination as
to the changes in the print trade cannot be
made, as until 1889, prints were classified in
the official returns along with dyed and
coloured goods. A fairly accurate idea of the
fluctuations in the trade may, however, be
formed from the material which we have been
able to collect. The result of the examination,
it may be at once stated, resembles that under-
taken in the case of flannel, and published in
our issue of a week ago; for while shipments
of prints have steadily increased in quantity,
the average values per yard have fallen. Not
only is this the case, but the gross receipts
from our foreign print sales have declined.
This much may be inferred from the fact that
the value of printed and dyed goods shipped
last year was, in round numbers, £19,341,000,
against £21,000,000 in 1882, £22,200,000 in
1881, £23,300,000 in 1872, and £22,000,000 in
1866. We have selected these dates at random,
but there were other years when the value of
our shipments exceeded £19,000,000. The high
average values obtained in the sixties were, of
course, due to the scarcity of cotton owing to
the Civil War in the United States. But in
1872 we sold 1,137,000,000 yards at an officially
declared value of £23,300,000; while for the
nineteen millions odd we obtained last year,
over fifteen hundred million yards of printed
and dyed goods were given in exchange. Any
one who cares to work the sum can readily
ascertain the extent of the average reduction
per yard in prices. The quantity of printed and
dyed goods shipped in 1890 was the highest
recorded, prints figuring for 950,000,000 yards,
and dyed goods for 593,000,000 yards. Last
year there was a falling-off, the amounts being
904 million and 575 million yards respectively.
The result was natural, seeing that the South
American and other important markets have
been so depressed. It should be a source of
satisfaction to those in the trade to know that,
as far as can be ascertained, the drop of last
year was not due to the competition of Con-
tinental rivals in neutral markets. France,
Germany, and Belgium have, in fact, taken
more, the falling-off being chiefly in coun-
tries which do not supply their own wants.
In 70 years there has been an enormous expan-
sion of our foreign trade in printed and dyed
goods. In 1820 the total was 134 million yards,

valued at £7,742,000—about one-eleventh the quantity, but over one-third the value of our last year's shipments. In 1835 the exports had grown to 279 million yards. The value of this last-named quantity was, however, only £8,200,000—so great had been the economies effected in the cost of production during the 15 preceding years. The exports in 1863 were only 600 million yards, the short supply of cotton having brought about a reduction. With fuller supplies business rapidly recovered, and the following table gives the course of the trade:—

	Quantity in million yards.	Value in million pounds.
1865.....	700	17.1
1870.....	963	19
1872.....	1,137	23.3
1873.....	1,000	21.5
1888.....	1,430	18.3

Since 1889 the returns have been more complete, prints being distinguished from dyed goods. We have referred to the figures for the past two years above. Prints also are now made narrower and lighter than in former years.

OUR BEST CUSTOMERS IN 1835 AND 1891.

A comparison of the Board of Trade Returns for 1835 with those for 1891 affords evidence of several striking facts as to the new channels in which the vast current of British trade runs. Although our remarks refer only to printed and dyed goods, they may be taken to apply in a general sense to other cotton manufactures, if not, indeed, to all articles of British production. The explanation should, however, be made, that although India and Ceylon took only a comparatively small number of coloured goods in 1835, their purchases of grey and bleached goods exceeded 39 million yards. The total was, however, still behind that of either the United States or Brazil, although it exceeded that of Germany slightly. Our best customer in 1835 was the United States, which took 49½ million yards of printed and dyed goods, against only 35 millions last year—with a population over three times as great. Brazil came second with a total of 30 million yards, against 11½ million in 1891. The purchases of several other markets are given below:

	1835.	1891.
	Million Yards	Million Yards.
Germany.....	29	23
British W. Indies.....	22.8	23
Portugal.....	17.8	12.6
Italy and Islands.....	13.4	24
India and Ceylon.....	12.3	335
Turkey.....	12.9	116
Holland.....	11	22

The figures for Turkey in 1835 included shipments to Continental Greece. The market, notwithstanding the separation of the returns for Greece, has, it will be observed, developed enormously. How we should fare if the Russian Eagle were ever allowed to fly on the shores of the Bosphorus we leave manufacturers to judge for themselves. New Zealand only took from us £155 worth of dyed and printed goods in 1835, the length being little over 7,000 yards. Australasia altogether took less than 1,100,000 yards, against 81,000,000 yards last year. The foreign West Indies, which in 1835 were of less importance than our own possessions in that quarter, the exports being little over 9 million yards, now take from us over 37 million yards, a quantity larger than that of our own islands. This is a striking fact, and it would be as well to remind Lancashire men that if a certain power which has ambitious ideas in connection with the acquisition of territory in the West Indies should succeed in its objects, our trade will receive a sudden check. In matters of this kind the political scheming of foreign nations has an important bearing upon our trade prospects. China in 1835 was a very poor customer, her pur-

chases of printed and dyed goods only amounting to 24 million yards, against 71 million last year. What the position will be half a century hence we may conveniently leave it for posterity to consider. There is quite enough to do in watching the movements of Bombay competitors for the people of the present day.

THE LESSON FROM THESE FIGURES.

There is a valuable moral to be derived from the figures which we have been at the trouble to collect; and it was to point that moral that we have adorned our tale so freely with statistics. The country which fails to heed the history of the past is apt to be deceived as to the probabilities of the future; and the truism is as applicable to commercial as to political matters. Less than fifty years ago the United States was the best market the cotton manufacturers of this country possessed, while China was one of the very poorest. In 1891 the position is almost reversed: China is one of our best customers; the United States has receded into the background. Our best customers in 1835 were, to recapitulate, the United States, Brazil, Germany, the British West Indies, and Portugal. The lead is now taken by India, China, Australasia, Brazil, Turkey, Africa, and British North America—all, with the exception of Brazil, customers whose wants in 1835 were comparatively small. To-day Africa stands in the same relation to the future as China did in 1835. It is the most promising market for cotton goods in the world, and we trust that Englishmen will take care they get a share of the trade. The nation which taught the world a lesson in humanity by abolishing the slave traffic has a claim upon the Dark Continent greater than that of any other civilised nation. It is to be hoped that Lancashire and other portions of the country will be able to read their title clear, for—after Africa—there are no more worlds to conquer on this little earth of ours!

PROSECUTIONS UNDER THE FACTORY ACT.

It appears that the criticisms we have from time to time offered upon the policy of the Factory Inspectors in the institution of prosecutions against the employers for alleged infractions of the law, are beginning to take effect. It is commencing to dawn upon the intellects of these gentlemen that when an employer has done everything humanly possible to secure the observance of the law, and it is then broken by a weaver, minder, or other operative, the said operative ought to accept the responsibility. On Wednesday, at Colne, in a prosecution before the magistrates, John Bannister, weaver, Nelson, was fined 5s. and costs for allowing a child to sweep a loom whilst in motion. The factory inspector said he was satisfied that Bannister's employers (Messrs. Hartley and Co., cotton manufacturers, Nelson) used all diligence to see that the Factory Acts were observed, and he wanted weavers to see that they were equally responsible with employers for allowing young persons to clean machinery in motion. If we remember rightly, something less than 12 months ago Messrs. Hartley and Co. were prosecuted and fined for an exactly similar occurrence—a fact on which we commented. We would observe that if the inspectors want to get the laws faithfully observed in their respective districts, they had better pay more attention to the infractions committed by the operatives in every point, and less to making the employers into vicarious scapegoats for the wrongdoings of other people, and they will soon find the most satisfactory results arising from such change of policy. In every instance of a Factory Act prosecution let the inspector carefully ascertain who is the real offender, and then in the case of its being an

offence worth noticing beyond a caution, let them prosecute the offender, whether master or man, accordingly. It would materially assist and stimulate the discriminating powers of inspectors, if the benches of magistrates would dismiss all the cases brought before them in which employers are summoned when the real offenders are the workers. It is their function to protect the innocent and to punish the guilty. The erroneous policy acted upon by the inspectors arises from their minds being imbued with an old legal tradition, which does not apply in this case, and ought at once to be discarded. We refer to the legal maxim that a master is responsible for the acts of his servant, which is to a certain extent an equitable and wholesome regulation. We would point out, however, that in these cases it does not apply. An employé in our cotton mills is not a servant at all: he is engaged to perform certain specific work, and refuses very quickly to do anything else beyond that. He is, therefore, not a servant but a contractor, and the law of master and servant, with its special obligations, does not apply. This fact, in the case of employers being subjected to prosecutions, should never be lost sight of, and a denial of responsibility should always be set up by the prosecuted party. We are glad to see that correct ideas are beginning to germinate even in uncongenial soils regarding these matters.

THE BATIKS OF THE MALAYS.

The term "batik" is applied by the Malays to woven fabrics decorated with coloured patterns by means of a combination of printing or painting and dyeing, which are worn as oblong loincloths, called "sarongs," or as square cloths for the head called "Kain-pandjangs." These batiks are produced in Holland and Switzerland with the aid of Western resources, but the manufacturers are obliged to sin against the first principles of their art in order to make the articles which they supply in accordance with the tastes of their customers. Professor O. N. Witt, writing in the *Leipsc Monatschrift*, says the women who dye the batiks—for this branch of Malay industry is attended to by women—saturate the parts of the fabric which are not to receive colouring matters with a mixture of wax and resin melted. It is applied by a can of sheet copper of the thickness of paper with a handle of bamboo, and provided in front with a bent reed as fine as a hair. If the mixture becomes too thick it can be easily thinned by warming. The worker sits before a sort of easel, and marks with her wax pencil the figures which she desires to trace on the batik at which she is working. When the design is finished the fabric is hung up in order that the wax may become quite hard, and then the stuff is dipped in the dye-bath. Afterwards the wax is removed by boiling with ash-lye. In this way a design in one colour on a white ground is obtained. If now the fabric be again coated with wax the parts which remained white can be dyed with any colour desired. A part of the fabric dyed at first can also be dyed again, and thus a mixed tint is obtained. By the frequent repetition of this process very graceful and richly-coloured patterns are produced. This, however, is not the only way in which batiks are decorated. The cunning Chinese have taught the Malays to press the fabrics with blocks in relief, which have been dipped in hot wax, instead of laboriously tracing the design out by hand. For this purpose they import blocks of sheet copper, and the use of this method is spreading. The wax is of course brittle after it has hardened, and therefore the dye finds entrance at several spots, and when the wax has been removed by boiling these broken places present the appearance

of fine coloured veins pervading the fabric. In course of time this accidental feature has become indispensable for Malay taste, and these veins are now regarded as marks of a good batik, and are intentionally produced. The dyes principally used by the Malays in the production of these batiks are indigo, catechu, and munjeet—a madder-like root. Specially expensive examples are decorated with gold leaf, fastened on by means of a very tenacious glue. As may be supposed, the batik, though produced in a country in which labour is very cheap, is, nevertheless, very costly on account of the amount of time and effort demanded. A genuine "sarong," the ground work of which consists of machine-made cotton stuff from the factories of Bombay, costs, if the amount of stuff used is estimated at one square metre, 20 to 30 Dutch gulden, if not far more. The "sarongs" of the native princes are often extremely expensive productions. Under these circumstances it is not at all surprising that European manufacturers have attempted to produce these goods in large quantities. The chief seats of the manufacture of these spurious batiks are Glarus in Switzerland, and Holland. Hundreds of thousands are made there every year and exported to the East Indies. These foreign goods, however, can never be mistaken for genuine batiks. The difference lies mainly in the veins, which European skill fails to reproduce. The wax method, of the natives has been adapted to European machinery with better results than before, but nevertheless the inferiority of the imitation is evident. The batik, says Professor Witt, deserves to be placed by the side of the other typical products of the artistic industry of Eastern Asia, and to be better appreciated than has hitherto been the case. It presents the ethnographer with a characteristic article of costume of a very interesting race; it supplies the commercial connoisseur of art with a typical and complete example of the peculiar and not unbeautiful ornamentation of the Malays; it furnishes the chemists with a specimen of peculiar and primitive methods of dyeing; and it deserves the careful consideration of thoughtful persons concerned in textile industries as a sample of an extremely ingenious method of textile ornamentation.

"REDUCTION OF HOURS OF LABOUR WOULD BE CONFISCATION OF CAPITAL." AN AMERICAN VIEW.

For an infinity of reasons, the doings of capitalists and labour advocates in the United States possess special interest to Europeans. The progress of the Republic has been so rapid that people have scarcely had breathing time to consider the problems which in the old world have been pondered over for generations, and which, as we shewed last week in our remarks upon French legislation as to mills and factories, are still engaging attention. Occasionally, however, one perceives signs of a change which must come eventually in the United States. Two orders were introduced at the present Session of the Massachusetts legislature for reducing the hours of labour for women and minors in mercantile and manufacturing establishments to fifty-four hours per week, and to fifty-six hours per week in mechanical and manufacturing establishments. Four hearings were given by the Committee on Labour to these orders, the last hearing being held on March 28. Amongst the opponents of the measure was the ex-treasurer of the Merrimack Manufacturing Co., of Lowell. Massachusetts is almost entirely dependent for its existence upon mechanical operations. It is neither a mineral nor an agricultural State, and the proposed reduction

of hours in mills would affect what is essentially the only industry in a thickly populated State. Since the passing of a ten-hours law Massachusetts has undoubtedly prospered; but Mr. Dalton, the gentleman referred to above, said that other States had gained in wealth more rapidly. He instances New Hampshire and Connecticut, both competitors of the Old Bay State. Mr. Lyman, treasurer of the Lowell Manufacturing Co., Lowell, testified to the effect that, while it may be perfectly true that half the spindles in New England are in Massachusetts, that is not the practical question; the question is, can we retain them? That they have increased during the last twenty years is also true, for reasons in spite of legislation rather than in consequence of it. He argued that if there was to be a further reduction in hours of labour, it should take place also in competing States. The proposition is unanswerable, and applies equally to the case of Great Britain, which cannot afford to pass further labour laws unless Continental nations keep in line with us. Another witness was of opinion that the passage of a nine-hours law would confiscate millions of invested capital. Our Boston correspondent gives extracts from the evidence which has already been heard on the employers' side. Many of the arguments advanced apply forcibly to the position of manufacturers in this country. We may say to the eight-hour agitators here, as Massachusetts men say to the nine-hour agitators there, that it is hardly possible that anything that would injure and cripple their employers would be of benefit to the employed. But from some of the things which are from time to time asked of the legislature, it would appear as if the employé thought that if more legislation could be enacted interfering with or handicapping the employer in competition with the outside world, it would redound to his profit and welfare. If this is not so, why do employes ask that the hours of labour in manufacturing concerns shall be reduced? Do the operatives expect the employers in England to be smarter than those in neighbouring countries? Do they not know that the manufacturers in this country are already subject to more legislation and State supervision than those in neighbouring countries? Do the operatives not know that if this kind of legislation is continued and the measures are made laws which they seem to be in favour of, capital, instead of staying in England as a suitable place for investment, will go elsewhere, where the restrictions are less severe? We have altered Massachusetts in the above remarks to England. With this alteration the argument of the employers there applies exactly to the case of English manufacturers.

'GENERAL' BOOTH ON THE INDUSTRIAL PROBLEM.

Our Oldham correspondent writes as follows:—"Last week-end General Booth, of the Salvation Army, paid a visit to Oldham. In the course of an address on the Saturday evening he took occasion to refer to the Labour problem and his Darkest England Scheme. Replying to criticisms, he said it was impossible to avoid competition altogether, and the fact was there were too many workers, and too little work in this country. That was the difficulty, he added, 'and things were getting worse.' Passing on to the Lancashire connection with India, he stated that he had only just come from India, and in that country 30 years ago there was not a single loom worked by machinery, while there were 275,000,000 of people. Now mills were being raised up in every direction, mills as large as some of those he had seen on his journey from Stockport to Oldham. Indeed there were so many mills there now that there was not a single piece of

the coarse cotton calico mostly worn for clothing, imported. Thirty years ago all this was imported. The finer calico they could not yet make, owing to the cotton not being clean, but they might be able to do so in time as their skill increased. In view of the congested state of many industries it seemed to him that there was 'nothing for it but to take the men back to the land, and let them take from the ground what would satisfy their needs.'"

A POINT FOR 'GENERAL' BOOTH'S ATTENTION.

General Booth is a very clever man in the department of religious and social work with which his name is so prominently connected, but we cannot estimate him very highly as an industrial expert. So many important matters must demand the devotion to them of his time and attention that it is simply impossible that he should be able to gain more than the most superficial acquaintance with industrial problems. In the above extract from his address at Oldham, some problems are touched upon that would need a great deal of space to discuss adequately, and on this account they cannot be considered here. General Booth's central proposition and object in his social efforts is, however, to get the people back upon the land, as the vice, poverty, and degradation he finds in the slum life of our cities are directly chargeable upon the overcrowding and the temptations offered to the poor in town and city life. One of the most efficacious means he can adopt is to diminish this drain of population from the country to the towns as far as possible. This would be much better than allowing the people to come to the cities and be ruined, and then to cart them back to the fields and rehabilitate them with the simple tastes and sentiments of country life. We would point out one of the active causes that drive our rural population cityward to an extent far beyond what may be termed the natural necessities of their condition. This is the want of employment in the country. An agriculturist or small grazing farmer who is nicely settled in his little farm finds his family increasing to an extent beyond the capacity of his acres, either to find work for or to maintain them. In the early days of the cotton trade in these districts there would probably have been within reach a cotton mill or weaving shed at which there could have been obtained suitable work for both boys and girls, and at such wages as would have sufficed to have maintained them well under the parental roof. But nearly all these mills have long been closed, and their ruins—not very picturesque—encumber the estates upon which they stand. And why is this? What change has come over the trade to prevent their continued occupation as industrial establishments? Simply this:—The increasing competition has diminished the profits of the trade so far that under the local disadvantages of distance from market, sources of coal supply, and the cost of cartage of raw materials and goods produced, such a mill could not be carried on without loss. The institution of inflexible standard lists of wages by the leading trades' unions, which admit of no cognizance being taken of local disadvantages, but compel the employer in the rural districts to pay to the fraction the same rate of wages as the employer in the towns who is surrounded with every facility for the conduct of his trade, prevents employers from recouping themselves by a slight reduction in the rate of wages, though such would leave the recipients in possession of a large balance of advantage and profit compared with that to be obtained from removal into a city or town. It is the insistence upon these rates that has destroyed the cotton trade in the country districts. If, therefore, General Booth would to some extent prevent the migration of country people to the towns, or would induce

those who are already there to return to the country, the best, cheapest, and surest way of achieving these ends would be to render it possible for some portions of our industries to be replanted in the country. This would soon diminish the steady stream of population that runs slumward, and would also tend to deplete the fetid mass that is already sweltering there. And it could be done by inducing such trade unions as those of the Lancashire cotton manufacturing centres to recognise and make allowances for local disadvantages, as unions in other industries do.

HOW TRADES-UNIONISM STRANGLES THE DEVELOPMENT AND PROSPERITY OF LOCALITIES.

Some of our readers are inclined to think we are occasionally too hard upon trades-unionists, and bring charges against them that cannot be substantiated. This opinion, however, springs more from their amiability of disposition than accuracy of judgment; they don't know trades-unionism as we know it through its malicious operations for several years past having come very much within the field of our observation. Most of our readers know that within the past few years a new town has sprung up in Lancashire under the shadow of Rivington Pike, a well-known Lancashire hill and landmark famous for many miles, even beyond the county border. This is Horwich, which practically owes its origin to the Lancashire and Yorkshire Railway Company making the spot the headquarters of its engineering works, which were removed from Miles Platting, Manchester. The new works found employment for a considerable number of men and boys, and many families removed from the Manchester and other districts thereto. There can be no question that physically they will have been greatly benefited by the transfer from the smoky atmosphere of our large cities and towns to the invigorating air of the breezy hills amidst which Horwich is situated. But engineering works find no employment for females, and for these members of the families that have taken up their abode in the young town there has been very little employment available. In order to provide this, therefore, a company was formed and a weaving shed built. This shed was let to Messrs. Southworth and Sons, manufacturers, of Clitheroe and Blackburn, a young firm of considerable enterprise that has achieved a well-deserved success. For a time all went well. But the officials of the East Lancashire Union of Operative Weavers found out the fact, and sent forth their emissaries to spy out the land. The usual advantages were promised to the weavers if they would only join the Union, and this inducement succeeded. The Union then proceeded to see if matters were all right according to its conception of that idea, when, lo and behold, it was found that the firm was paying 5 per cent. under "The List." That must be stopped, and proceedings were immediately taken to rectify it. The firm was waited upon and asked to give a reason why they did not pay "up to the List?" The reply was that new and outside districts, of which Horwich might be taken as a type, suffered from a manufacturer's point of view under local disadvantages to the extent of more than 5 per cent. upon the wages list. The firm, however, had been content with 5 per cent. upon that list as a compensation. This, of course, was not satisfactory, "the firm must pay up." The members of the firm are men of decision; they therefore declined to accept and honour the demand, and stated that in preference they would close the mill. With assumed confidence that this was only meant to frighten them, the demand was reiterated. Messrs. Southworth immediately proceeded to weave out all orders, and looms soon began to come empty. When

a large number had stopped the weavers became really alarmed, and wanted to know what their employers meant, and were informed that they intended to close the place. The operatives then held a meeting, and soon obtained a signed requisition offering to work at the rates they had been receiving hitherto. Messrs. Southworth replied that they could not reconsider their resolution unless the Weavers' Union would give them a written undertaking not to interfere with them in any sense whilst paying such a rate, nor prevent the operatives from working. This the Union would not give, and severely reprimanded the operatives who had called a meeting without first consulting them about the matter. The firm adhered to their expressed resolution, wove up, and have already removed a large number of the looms. The shed contained about 400 looms and preparation, and the weekly wage list was on an average £150. This has been lost to the operatives, to the tradespeople, and to the rising town, and all through the workpeople having been weak enough to entrust the care of their interests to men who did not care the value of a button top for their welfare; to officious meddlers who probably had never seen Rivington Pike in their lives until, like Satan intruding into Paradise, they entered Horwich for the purpose of working its people mischief. It is to be hoped that the weavers who remain until the new shed erected by another firm gets to work and finds them employment, will prove more sensible and prudent than they have been in the past.

ANOTHER STUPID PROSECUTION.

One frequently hears officials of associations of operatives connected with the cotton trade declaiming at length, and with a bombastic deportment intended to impress the credulous, that they have been the means of compelling the employers, who are their enemies, to confine the working of their mills to a certain number of hours, under the penalty of being brought before a bench of magistrates, and dealt with as the law provides. Again, there is the now oft repeated demand for an eight-hours working day, a reformation the new trades-unionists seem a little crazy about, and many are the signs on all hands of a belief that shorter hours of labour should become the rule instead of the exception. The capitalist is pointed out as the avowed enemy of this movement. Notwithstanding all these signs of the times, we not infrequently have brought before our notice cases in which employers and their managers desire to do their utmost to keep within the law as laid down in the Factory Acts, and yet cannot accomplish this, strange to say, in consequence of the reluctance to leave the premises of the very people who raise the cry of "give us shorter hours of labour." Only a few weeks ago we had occasion to call attention to a case of this kind at Oldham, and more recently still to one at Bury; and this week another such case comes from Elton in the borough of Bury. In this case the Waterside Mill Company, Lower Hinds, Elton, were summoned for employing three young persons at ten minutes past one on Saturday, the 9th April, that being the time at which Mr. Pearson, factory inspector, discovered three young persons cleaning looms. Mr. Briers, manager for the defendant's company, said they tried, as far as possible, to comply with the Act. It happened, however, on that particular Saturday that their engine tender was off, and they had also two overlookers off, whose duty it was to see that all the weavers were out. In consequence of the engine tender being off, he (the manager) had to attend to the engine, and it threw him a little late in going into the shed to see that the hands were out, and that was

the reason the weavers were in. It was rather hard upon them that they should have to be brought up there and have to pay in respect of those people, when it took them all their time to get the weavers out. He thought it would be better if the weavers were made to pay.—Mr. Newbold: What time did the engine stop?—Mr. Briers: At 12-30.—Mr. Briggs: Your explanation seems to be that this was just an odd occasion, but you say you have constant trouble to get the workpeople out?—Mr. Briers: It is one continual drag to get them out.—Mr. Briggs: What are they doing?—Mr. Briers: They are tattling and talking—generally a lot of them.—Mr. Pearson: I found them actually working. (Mr. Briers: I admit that.) They were cleaning looms. They are allowed from 12-30 to 1 o'clock, by which time work of all kinds must cease.—Mr. Openshaw: Have you had occasion to complain before?—Mr. Pearson: Yes, I have, but I looked over it then.—The Bench ordered payment of costs in each of the three cases. This case affords another illustration of the utter unreasonableness of these people, or perhaps rather of the stupidity of our law-makers and the injustice inflicted upon employers by their enactments. After the stoppage of the engines of a mill at meal times and before starting again weavers will indulge in their sociable instincts, the silent machinery permitting them. Hence they gather in groups to indulge in the gossip so dear to the hearts of girls and women, and when the time for leaving the establishment has come they have not finished their work. They stay to complete it, and whilst they are doing this in walks the inspector, takes their names, summons their employer, and mulcts him in fines for infractions of the law of which he is in blissful ignorance. Now we venture to affirm that no inspector for an offence of this kind ought to have summoned the employer, and no bench of magistrates would do its duty in inflicting a fine upon the employer. The inspector ought to have summoned the weavers and fined them, and in the event of his summoning someone else, the bench of magistrates ought to have dismissed the summons and let the inspector pay the costs. It is time this sort of tyranny was put an end to, and it will be if magistrates will do their duty. It is actually the case in mills we know of that a man is engaged to remain in the weaving shed all the meal times to prevent weavers who, owing to having some distance to come to their work, get their breakfast in the shed, from piecing a broken end, shutting a cop, oiling their fly spindles, or pulling out a piece of cloth, and even he finds it impossible to keep them from it. This is the fruit of trades-unionism, which has and continues to stimulate the inspectors to an absurd degree of strictness. Can any parallel to these absurdities be found anywhere in the records of industrial history? We say not, and in the conditions of to-day they require to be immediately either ended or mended.

FACTORY ACT PROSECUTION: THE "PARTICULARS" CLAUSE. - On Thursday, at Church, the Indian Mill Company, Church, were summoned for a breach of the Factory Act. Mr. Birtwistle stated that the prosecution was based on Section 24 of the Factory and Workshops Act, 1891, by which it was provided that weavers must be provided with such information by the masters as to properly enable them to calculate the price they should receive for certain work. Mr. Birtwistle visited the mill on April 23rd, and found two weavers named Enoch Whittam and Henry Fisher, who had not been supplied with the necessary particulars to enable them to accurately estimate the amount of wages they should receive. This was the first prosecution under the Act, and he had simply instituted the proceedings as a warning to other manufacturers. He was quite willing to withdraw the case on payment of costs. The magistrates consented to this arrangement.

SETTLEMENT OF THE DISPUTE IN THE COTTON TRADE.

On Thursday afternoon the meeting arranged to take place between the representatives of the Employers' Federation and those of the Federation of Operatives, after a lengthy discussion extending over three hours, succeeded in drafting terms of settlement for submission yesterday to their respective associations.

The meeting was held at 71, King-street, Manchester. The persons present were Messrs. E. Travis (in the chair), C. T. Bradbury, R. Evans, W. R. Sidebottom, S. Andrew, S. Smethurst, and W. Tattersall, secretary, representing the Federation, and Messrs. Thomas Ashton, James Mawdsley, John Fielding, and Wright Wood, representing the operatives. It was unanimously agreed, in connection with the Stalybridge strike, that a settlement be effected upon the following terms, subject to the confirmation of the two associations:—

1st.—Where bad work is proved, the employers agree that it shall be an admitted principle that the men shall be entitled to compensation for loss in wages until the grievance is removed.

2nd.—Should there be no loss of wages, but the work is proved to be bad, then the firm involved shall make such alterations in the speeds or material as may, in the opinion of the investigators, be required to meet the case.

3rd.—Any loss in wages resulting from such temporary reduction in speed shall be covered to such extent as the two associations shall decide. This clause, however, shall not apply to any district in which the minimum or maximum speed clause is in operation.

4th.—Should the hands at the Stalybridge Mill Company resume work, and after a reasonable time make a complaint of bad work, the foregoing agreement to apply in their case.

5th.—The Employers' Committee further agree to recommend the Stalybridge Mill Company to re-employ all the old hands they can find work for.

6th.—In the event of the foregoing resolution being ratified, it is recommended that the mills do resume work on Monday morning next at 6 a.m.

A document embodying the foregoing terms was signed by all the gentlemen present.

The trade and the country generally may be congratulated upon the fact that a settlement has been made, and that a continued suspension of the industry on the extended and extending scale that was threatened is not necessary. The terms as stated above will do very well for a truce, as they substantially embody the demands of the employers and are recessions from an untenable position taken up by the operatives. They are, however, very vague, are liable to much misinterpretation, and certainly cannot safely be adopted as the permanent basis of a treaty of peace.

It is absolutely necessary that the domineering and hectoring policy of the trades-unionists shall be renounced if the trade has not within a short term of years to be killed outright in this country, and transferred to other lands. There is no objection in the minds of the employers to the existence of trades-unions amongst their employes, nor to holding communications and conferences with them upon matters affecting their mutual interests. What they are resolved upon is that they will no longer submit to the tyranny and dictation of trades-unionism run mad, which is its present condition nearly all over the country. The operatives must recognise the fact that capital and enterprise have their rights as well as their duties, and if they are to perform the latter they must be protected in the former. The operatives, as being most deeply interested in the prosperity of capital and enterprise, and as the persons who receive by far the greatest benefit from the investment of capital in our industries and the conduct of these enterprises by the skill, intelligence, and courage of the best men of the country, must do all they can, while defending their equitable interests, to avoid harassing employers and hampering their operations in the cruel, needless, and

irritating manner they adopted several years ago, and have continued to the present day. When they have come to this resolution and have shewn by their conduct that they have put it into practice, we venture to affirm that they will not find the employers the greedy, grasping money-grabbers it is their practice to depict, or, rather, to have depicted to them in their meetings. Nor are they the ignorant, stupid, incapable men it sometimes, indeed often, suits the leading officials of the Unions to represent them from both the platform and in the press. The burden of the conduct of a business in the textile industries in these days of protective tariffs in nearly every civilized country in the world, which necessarily throws English manufacturers into the poorest countries and markets that can be found on the face of the earth, is quite as much as human strength is capable of bearing, without such treatment as that to which they have been of late years subjected by those who have reaped the greatest benefits from their labours. If this policy be not changed in its every feature, the truce which has now been entered into will not long continue, but active operations will recommence, and the result of the contest can only be to the serious loss and injury of both parties, if not to their destruction. We recommend the operatives to study the history of the industry by which they earn their bread and maintain their families, and they will speedily find that they occupy a position of ease in labour and prosperity in earning that has never before existed in the history of the textile industries for any lengthened period, or over any important area. Such a study would enlighten them in many respects, as it would shew them that neither the development of the industry, the so-called wealth of their employers, nor their own present affluence, has arisen from anything they have done for themselves, or that trades-unionism has done for them. Their present enviable position, compared with that of the operatives of past ages and other countries, has resulted from the inventions of ingenious men, many of whom sprang from their ranks, but whom they regarded most mistakenly as their enemies and compelled to fly from their homes to save their lives, whilst ignorant mobs burnt their houses and furniture. John Kay, of Bury, and James Hargreaves, of Blackburn, are typical instances, and we could give many other names did space and time permit. But their inventions even would have fallen dead had they not been adopted and operated by the most intelligent and enterprising men of the time, who utilised their capacities, and developed in an enormous degree their perfection and usefulness. On this foundation they built up the industries and commerce of the country, which have carried it to the pinnacle of prosperity it now occupies, and rendered it the envy of the world. Our present spinners and manufacturers are, typically at least, the lineal descendants of these men; and surely they should be more regarded by the operatives than the noisy, ignorant fellows who have assumed their leadership. These men, with their little light, which that of the humble glow worm far exceeds in power, have led them into this ditch. Through lack of understanding they have committed the grossest blunders in taking up untenable positions, from which they will have to be ousted. If they are wise they will speedily acknowledge this by admitting the fact, and settling the strike at the mills of the Accrington Spinning Company, Wood Nook, Accrington, which is identical with that at Stalybridge, and was

inaugurated for the same purpose and by the same wirepullers. If these men do not immediately act in this manner, the people whose best interests are being sacrificed should compel them, otherwise recourse will have to be had, and that speedily, to some other of the resources of industrial civilization.

We have only a word or two to add to the foregoing, and that is to the employers. Having now got the first-fruits of their combination in view, the fact ought to be a convincing one of the advantages of organisation and should encourage them to perfect it, until not a member of the trade remains outside the local associations, nor a local organisation remains outside their federation. Both the spinning and weaving sections should then arrange an amalgamation for the protection of their interests, not only against trades-unionism, but also to guard from attacks in other places, particularly in Parliament.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

BOSTON, APRIL 23RD.

FACTORY LEGISLATION IN THE EAST.

The proposed nine-hours law legislation in Massachusetts has roused the intense opposition of employers in the State. The Committee of Labour appointed by the Legislature to hear evidence has already listened to the statements of some of the most prominent men in the cotton trade here. The operatives in the State are nearly all foreigners, Canadians (chiefly of French origin) being perhaps in the ascendant, and Great Britain supplying a large proportion of the remainder. Massachusetts does not have the cloth market to itself, but has to compete with New Hampshire, Rhode Island, Maine, Connecticut, New York, and the Southern States. Mr. Edward Nichols, of the Dwight Manufacturing Co., Chicopee, Mass., testified in forcible language to the effect that if employers are paid the same for nine hours work as they are paid for ten, the difference would wipe out most of the dividends now being earned. Pass a nine-hour law in Massachusetts in advance of the other States, says Mr. Nichols, and you practically confiscate to per cent. of the millions invested in buildings and machinery. It is not true that this great interest is owned chiefly by capitalists. Our men of greatest wealth are not putting their money into mills in Massachusetts. They can find more profitable employment elsewhere for their capital, he adds, and they see the danger which threatens them here.

Mr. N. B. Bonden, treasurer of the Barnard Mills, Fall River, said that that town now represents over one-third of all the cotton spindles in the State of Massachusetts. The manufacturers feel that any legislation that may still further shorten the hours of labour will work to their disadvantage. The reduction of hours from sixty to fifty-six weekly would reduce the production of the Fall River Mills about 700,000 pieces annually, and their receipts nearly \$1,000,000, and deprive the employes of some \$485,000 per annum in wages, while the wage earners of the entire State would lose nearly \$10,000,000 per year. The Southern States to-day have almost, if not quite, as many cotton spindles as the towns of Lowell and Lawrence combined, and the building of factories in those States is increasing. And when it is considered that the hours of labour in the southern mills are from sixty-six hours weekly in Georgia, to sixty-nine and seventy-two hours weekly in other localities in the south; that labour is very much cheaper there than in Massachusetts; that the facilities for transportation of finished goods are very much more advantageous there than here; that there is comparatively no cost for the transportation of raw cotton to the mills; and that even now the finished product of these Southern mills is being offered

over the counters of New York, Boston, and other leading markets, in direct competition with goods made in Massachusetts, to say nothing of exportation, it will be seen that the situation is becoming somewhat serious, to say the least, even with the present hours of labour.

It is not true that the operatives have been able to make as good wages since as before the passage of the ten-hour law, even with the increased speed and modern appliances. Prior to 1874 there were very few eight-loom weavers, most of them tending six and less. A weaver who could tend eight looms could make, under eleven hours, at wages then paid, \$10 to \$11 weekly. In 1875, an eight-loom weaver could earn \$8 and \$9; in 1878, \$7 and \$8; in 1885, \$6.25 and \$7.25; and since 1888 about \$8.50 to \$9 weekly. Speed had to be increased and wages reduced from time to time, and new appliances had to be introduced to enable the manufacturers to keep pace with the competition with which they had to contend.

Mr. S. B. Ashley, treasurer of the Barnaby Manufacturing Co., Fall River, says that the situation of things at the time of the passing of the ten-hour law was entirely different from the situation of matters to-day. The machinery which was being built then and put into new mills was built upon the same old principle. When the ten-hour law came into effect then came a rapid change in machinery. All inventive genius was put into force to develop some means whereby they could change and make up this one hour of the time lost in labour. The result was ring spinning came in; increasing the speed of cards, of looms, and everything of that kind took place, so that in a few years the new mills which had been put up took advantage of these new improvements and made money. The old mills had to re-vamp and put in new machinery on account of the change from eleven to ten hours. For the past few years, says Mr. Ashley, we have been looking forward to see if these improvements could be carried any further. The spindle man spends thousands of dollars on spindles, making samples and running them to see if he can get an extra thousand turns. He has not succeeded in doing so yet. The loom man has been at work to see if he can change the relative position of the crank-shaft lathe and breast beam so as to get more speed and more product, but he has not been able to do it. This has all been accomplished since the ten-hour law enactment, and now, having reached almost the highest point, they come here and ask us to take another hour off the hours of labour, and say that the same condition of things and the same result will follow if this is taken off as did before.

Of Southern competition, Mr. E. C. Clarke, of the Boot Cotton Mills, Lowell, has a good deal that is interesting to say. The whole danger to our Massachusetts industries is from the south; that has been brought to his attention, especially within the last few years, by the fact that the southern mills are taking away his work, taking contracts from him. For instance, a man with whom he used to have large contracts, say 50,000 pieces of heavy print cloth, will now come to him and say, "I would like to get another 50,000 pieces; what can you give them to me for?" Mr. Clarke figures them down to the lowest price, and says, "I can't give it to you; I can get them down south one-quarter cent a yard cheaper."

He adds: "I am losing my contracts a great deal in that way. It is also the same in regard to the trade in China, because the southern States get ahead of me. That being so, I wanted to look at it and find out just how I did compare with the southern mills. I asked the selling agent of one of the mills if he would compare prices with me for his work down there—the price of cotton, weaving, all that goes to make up the price of cotton goods. A South Carolina mill was taken, making similar goods to mine, only I make a much larger variety. I make standard drills and he makes standard sheetings. He also makes some I make. I make 4-quarter sheets, 56 by 60, and he makes the same. So I got the prices from him and compared them with mine, and I found first, in regard to the time, his mill runs twelve hours a day. There are several good mills down there. The Pacolet is a good mill; so is the

Clifton and the Piedmont. First, I found the number of hours each mill works a day. The southern mill works twelve hours; we work ten. Daily production of standard sheetings—Boott, 42 yards; Pacolet, 55 yards. In the extra two hours that ought to make only about 50, which shows they were speeding a little more than I was. I looked at their goods and found they were just as good as mine. Daily production of standard drills—Boott, 46 yards; Pacolet, 56 yards. They beat me actually in speed. Daily production of four-yard sheetings—Boott, 36 yards; Pacolet, 43 yards. That is just about the same speed; they simply get the increased product due to the extra two hours. In the cost per pound of 13 to 22 yarn I found they beat me out of my boots; we were not in it with them:—

Picking and carding	Boott	.....	\$ 43
	Pacolet	.....	34
Spinning	Boott	.....	53
	Pacolet	.....	32
Spooling and warping	Boott	.....	28
	Pacolet	.....	18
Weaving	Boott	.....	127
	Pacolet	.....	86
Total	Boott	.....	250
	Pacolet	.....	170

The average cost of cotton per pound was 10 cents during the winter of 1888-9. My cotton was costing me 10 1/2 cents per pound, and theirs 9 1/5 cents. The difference in the price of cotton was pretty near the profit. One cent a pound would not pay a dividend, but it is more than half of it. Apart from the cotton, which, of course, is cheaper, they work twelve hours a day, and I find they are getting about 60 cents where my men are getting \$1. They are just as good weavers—just as good spinners—so those who have been there tell me. This is the sort of competition we are meeting with."

Designing.

THE ANALYSIS OF PATTERN.—XII.

THE WEIGHTS OF CLOTHS.

Having indicated as clearly as possible the various methods of finding the counts and sett of any cloth, two very important matters must now be fully dealt with, viz., the weight of the various yarns employed in any given cloth, and the weight of the same cloth finished. We are quite aware that this question has been treated by other writers at some length, and we should be tempted to be very brief but for the fact that it has been treated under one heading instead of under the two indicated above. As those engaged in the trade are aware, the weight of cloth in the loom and the weight in the finished state vary considerably, and in the following treatment we have endeavoured to define all possible conditions by a combination of actual results with theoretical practice.

THE WEIGHT OF VARIOUS YARNS EMPLOYED.

The simplest form in which a question may occur under this heading is that in which having a cloth made to given particulars the weight of warp and weft is required.

Example.—A cloth is made of 2/40's worsted for warp, and 20's single worsted for weft. Sett 64 threads per inch in loom, 64 picks per inch, 34 inches wide, 50 yards of cloth from 56 yards of warp. Find the weight of the cloth.

This question evidently involves the finding of the weight of both warp and weft, which two together give the weight of the cloth.

Rule I.—To find the weight of warp: (1) Ascertain length of material in the warp, i.e., threads per inch \times inches wide = threads in warp; \times length of warp in yards = the length of material in the warp. (2) The length of material in the warp divided by the yards in 1 lb. of such material gives the total weight of warp in lb.

In the above example:—

$64 \times 34 \times 56 = 121,856$ yards of material in piece.
 $560 \times 20 = 11,200$ yards in 1 lb. of material.
 Therefore $121,856 \div 11,200 = 10$ lb. 14 oz. of warp in piece.

Rule II.—To find weight of weft: (1) Ascertain the length of the material in the piece by multiplying the picks per inch by the width in inches and by the length of the cloth. (2) The length of material thus obtained, divided by the yards in 1 lb. of such material, gives the total weight of weft in lb.

In the above example:—

$64 \times 34 \times 50 = 108,800$ yards of weft in cloth.
 $560 \times 20 = 11,200$ yards per lb.

Therefore $108,800 \div 11,200 = 9$ lb. 11 oz. of weft in piece. Then 10 lb. 14 oz. + 9 lb. 11 oz. = 20 lb. 9 oz. weight of 50 yards of cloth, and 20 lb. 9 oz. \div 50 = 6 1/2 oz. per yard of cloth.

In the above rules, prominence is given to the reason for the procedure rather than to the shortest possible statement, since we cannot impress too strongly upon our readers the advantage of working by reason rather than by rule-of-thumb. Two points in the above, however, need further explanation. In the first place, the reason for the weft rule is not as clear as it might be, since there is an apparent mixing up of yards and inches, which to the uninitiated is very confusing. If the sum be thought out as follows, the reason for the abbreviation will be evident:—64 picks per inch \times the width, will give the inches in 1 inch of cloth, and therefore the yards in 1 yard of cloth for $64 \times 34 = 2,176$ inches in the inch, and $2,176 \div 36 = 60 1/3$ yards in the inch = $60 1/3 \times 36 = 2,176$ yards per yard. From which it is very evident that dividing by 36 in one case and multiplying in another may be dispensed with altogether; thus the abbreviated rule above is obtained.

The other matter to which attention was directed is the fact that, although the warp calculation is for 56 yards, the weft is only 50 yards, since 56 yards of warp are assumed to yield only 50 yards of cloth, therefore weft will only be required for 50 yards. Since this will receive attention later, there is no need to go further into the matter here.

Having indicated the principles, the simplest method of stating the calculations for both warp and weft may now be given.

$$\text{Warp} = \frac{64 \times 34 \times 56}{560 \times 20} = 10 \text{ lb. } 14 \text{ oz. weight of warp.}$$

$$\text{Weft} = \frac{64 \times 34 \times 50}{560 \times 20} = 9 \text{ lb. } 11 \text{ oz. weight of weft; and the two together give 20 lb. } 9 \text{ oz. weight of 50 yards of cloth.}$$

A calculation simpler in principle than the above cannot well be imagined; but the basis of all subsequent warp and weft calculations is present, and this being so, its thorough comprehension is most necessary.

Attention may now be directed to calculations for more complicated warps, two modifications on the above practically including all possible warp calculations.

Rule III.—To find the weights of the various colours of yarn in a given warp:—(1) Find the number of ends of each colour in the warp, i.e., divide the threads in the warp by the threads in one repeat of the colouring, thus obtaining the number of repeats of the pattern across the piece; and this multiplied by the ends of each colour in the pattern gives the number of ends of each colour in the warp. (2) Multiply the ends of each colour by their length, i.e., the length of the warp and \div the yards per lb. according to the counts of the yarn.

Example.—Find the weight of each colour of yarn in the following:—

	Warp.
8 threads	2/40's black
2 "	2/40's black and white twist
4 "	2/40's black
2 "	2/40's black and orange twist
—	16's reeds 4's

Threads in pattern 16.

Weft.

All 20's black; 64 picks per inch.

Sett 34 inches wide, warp to be 56 yards long, to yield 50 yards of cloth.

(1) $64 \times 34 = 2,176$ threads in warp, and $2,176 \div 16 = 136$ repeats of pattern across warp, and $136 \times 12 = 1,632$ threads of black, $136 \times 2 = 272$ threads of black and white twist, and also of black and orange twist.

$$\frac{1632 \times 56}{20 \times 560} = 8 \text{ lb. } 2 1/2 \text{ oz. weight of black yarn.}$$

$$\frac{272 \times 56}{20 \times 560} = 1 \text{ lb. } 5 3/4 \text{ oz. " black and white yarn.}$$

$$\frac{272 \times 56}{20 \times 560} = 1 \text{ lb. } 5 3/4 \text{ oz. " black and orange yarn.}$$

10 lb. 14 oz. total weight of warp.

For the weft $\frac{64 \times 34 \times 30}{20 \times 56} = 9$ lb. 11 oz. of weft.

The same method of working may be adopted whatever the order of colouring may be. The same principles may also be applied to weft colourings, as will be shewn later.

The second complication in warp calculation is the not unfrequent system of using yarns of two or more counts in the same warp. Two methods of finding the weight of the warp under these circumstances present themselves:

Firstly, the average counts of the two or more yarns may be found and the weight calculated for the average counts on the ordinary system.

Secondly, should the order of warping, etc., be very complicated, the system employed for finding the weights of various colours may be adapted to these conditions.

The cloths most easily dealt with under the first conditions are backed and double cloths, in which the warping plan seldom exceeds three or four threads.

Example.—A warp is composed of alternate ends of 2/40's and 2/30's worsted, sett 120 ends per inch. Find the weight if made 6 inches wide, 60 yards long.

Rule IV.—To find the average counts.—Find the resultant counts of the 2, 3, or 4 ends combined, and

then multiply by 2, 3, or 4, according to the number of ends given.

In the above example $\frac{15 \times 20}{15 \times 20} = 8\frac{2}{3}$ and

$8\frac{2}{3} \times 2 = 17\frac{1}{3}$, the average counts, and

$\frac{120 \times 66 \times 60}{17\frac{1}{3} \times 560} = 48$ lb. 15 oz., weight of warp.

Or by taking each count separately:—

$\frac{60 \times 66 \times 60}{20 \times 560} = 21$ lb. 3 oz., fine warp.

$\frac{60 \times 66 \times 60}{15 \times 560} = 28$ 4 thick warp.

Total weight 49 7

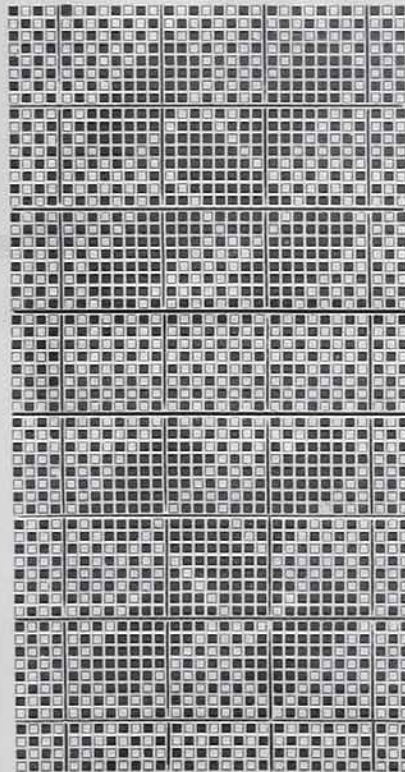
The 8 oz. lost by the previous method is due to the fractions involved. The advantage of being able to reason a question out in more ways than one has been here clearly shewn.

Erratum.—In last week's issue, the reference to the angle formed by the weft with warp, with half an equilateral triangle, was inadvertently lettered wrongly, but if the base of the triangle be lettered b, the altitude c, and the hypotenuse a, the deduction will be understood.

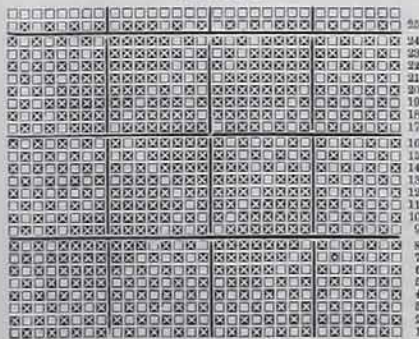
NEW DESIGNS.

COTTON DRESS DESIGN.

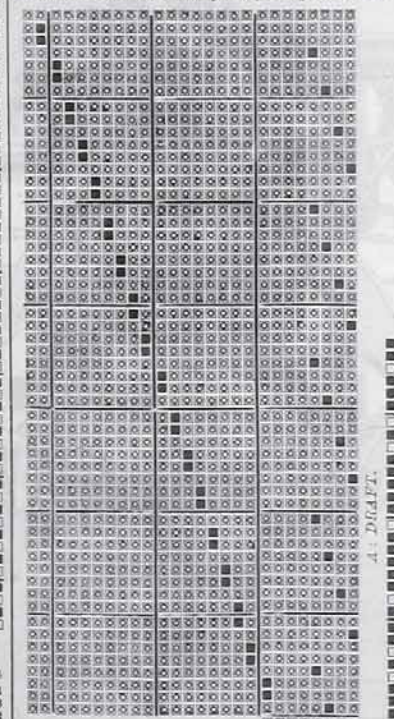
The colours at present most popular, although rich in costly materials, generally assume quieter hues in inexpensive fabrics. For ordinary everyday wear the most charming cotton dress goods are in every shade of brown, grey, electric blue, green, and pale fawn. There are a few greens almost black, and some queerly-shaped designs,



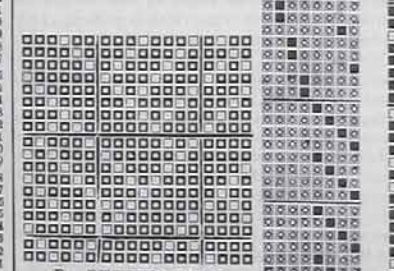
DESIGN A.



A: PEGGING PLAN.



A: DRAFT.



B: PEGGING PLAN.

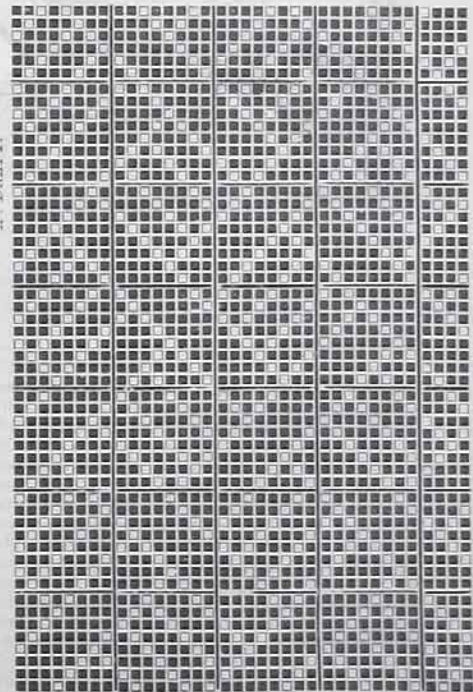
which look as if they had been carefully prepared and then broken up, a confused arrangement being adopted. Many fabrics have a cotton ground plain, of neutral or sombre shades, shot with bright silk or mohair.

Design A will be found a good style in fancy cotton dress materials. The yarns must be of the very best quality; warp 2-60's, the extra warp for the figure 2-40's; and weft 40's. The draft and pegging plan will shew how the plain and figured stripes are formed; four shafts for ground, 21 for the figure, 40 dents per inch, two and four in a dent; 80 picks per inch of weft, all one shuttle. We give a pattern as a guide; but broader stripes and colours can be arranged at will; 36 white on the four plain or ground shafts; all the extra warp for figure on the other 21 shafts are two in a heald, and along with the ground ends, two in number, make four in a dent; it would be necessary to have this figured extra warp stripe upon a separate beam; 2 dark brown, 2 white (ground), 2 dark brown, 2 white (ground), 2 dark brown, 2 white (ground), 2 dark brown, 2 white (ground) 2 dark brown, etc., the dark brown up to 42 ends; the white drawn in on the ground shafts, one on each side of the two dark brown; 36 white, 36 dark dove; 42 dark brown along with the white ground ends as given above; 36 dark dove, and repeat from the first "36 of white"; weft all white. The entire pattern would read as follows:—

- 36 white, two in a dent, or on plain shafts.
- 2 white; repeat 20 times on plain shafts.
- 2 dark brown; repeat 20 times on the 21 shafts.
- 36 white on plain shafts.
- 36 dark dove on plain shafts.
- 2 white; repeat 20 times on plain shafts.
- 2 dark brown; repeat 20 times on the 21 shafts.
- 36 dark dove on plain shafts.

COTTON SUITINGS.

Design B is a broken diagonal, well adapted for blouses, cotton suitings, and many other purposes. On 18 shafts, 18 to the round, straight over-draft; warp 20's in a reed, 40 dents per inch, all two in a dent; warp drawn in two in a heald, one heald per dent; weft 20's, two in a shed, 80 picks per inch; must be of the best materials; the goods well bleached or piece-dyed in fawns, buffs, silver grey, dove, drab, light blues, or any of the fashionable shades, and beetle finished. This design worked out from particulars given will be found satisfactory.



DESIGN B: DIAGONAL SUITING.

Machinery and Appliances.

IMPROVED PATENT PLAITING OR FOLDING MACHINE.

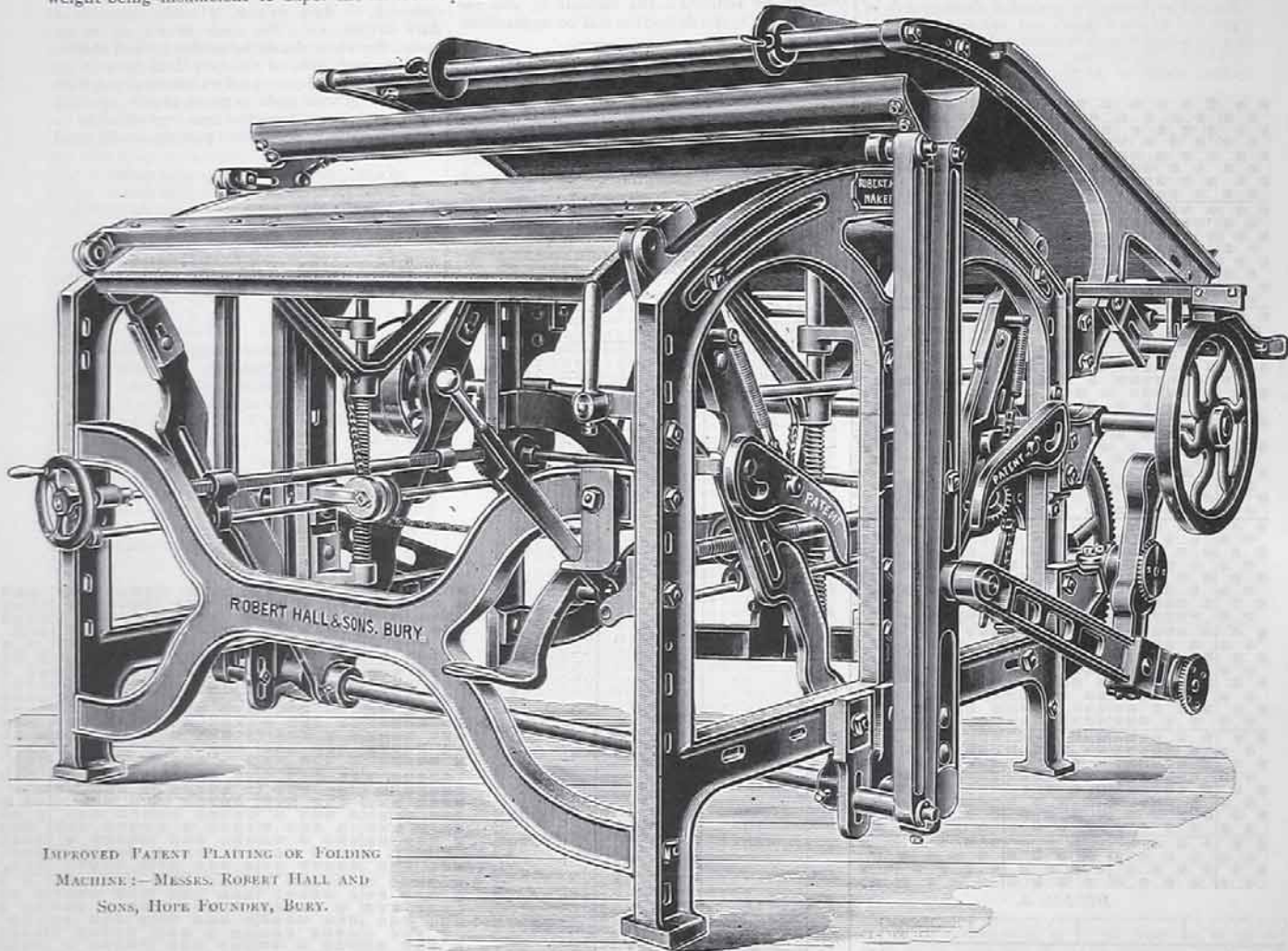
MAKERS: MESSRS. ROBERT HALL AND SONS,
HOPE FOUNDRY, BURY.

A very useful and sometimes an almost indispensable adjunct in the furnishing of a weaving mill warehouse is the plaiting or folding machine. For plaiting the lightest classes of fabrics, such as fine muslins, light Indian mulls, and others of kindred weight and delicacy of texture, it was not much if ever used on its first appearance, as, owing to their tendency to "balloon," arising from their lightness of weight being insufficient to expel the air from

There are plaiting machines of several types in use in the various textile industries, but almost the only one known in the cotton trade is of the type shewn in our illustration. As will be seen, on the upper part of the frame there are projections extending to the middle of the machine and carrying the delivery or inspection table. Inside the frame is placed the adjustable table, the surface of which, instead of being flat, is slightly curved so as to form the segment of a circle. The table is mounted upon two vertical rods, carrying spiral compression springs, on which it is pivoted so as to allow a slight range of action for facilitating the depositing of the plait of the cloth. The plaiter consists of a compound knife mounted upon oscillating standards, pivoted at the bottom. These standards are connected with and actuated by a crank, arranged so as to traverse the compound knife over the arc surface of the

if of a somewhat light texture, was liable to be frayed at the edges of the folds owing to the friction between the knife edges and the card teeth of the gripper. When long pieces of heavier goods were plaited the pressure upon the table and against the gripper was insufficient to enable the latter to retain its hold upon the piece. The first-named of these defects resulted in positive damage to the fabric; the second in considerable inconvenience to the attendant, and imperfection in making up the goods. Since that day various improvements have been effected, but all appear to have left something more to desire, and this to a large extent has been provided in the improved machine illustrated herewith.

In this machine the table is mounted as before, but the vertical rods are provided with strong compression springs, in addition to the counterpoise weights, which keep the table



IMPROVED PATENT PLAITING OR FOLDING
MACHINE:—MESSRS. ROBERT HALL AND
SONS, HOPE FOUNDRY, BURY.

between the lays as these are deposited, the piece bulged out on the plaiting table, and the plaiting was not satisfactory. For the heavier makes of cloths, from Indian shirtings, printing cloths, and all miscellaneous fabrics of like or heavier textures and weights, the plaiting machine was and now is indispensable where it is desired to fold and make up the cloth for despatch to Manchester with the highest degree of tidiness that can be attained. Cloth so made up and delivered always creates a far more favourable impression than it does when made up in an untidy manner. Even on this ground alone machines for this purpose soon pay for their cost regardless of the economy effected by their use in other respects.

plaiting table. The edges of the compound knife, between which the cloth is passed, carry it beneath a gripper at each side of the table. This in the old form of the machine was a horizontal bar fixed fast to the machine frame, and having its under surface clothed with coarse card teeth for retaining the fabric when once it had been brought beneath it. As the plaiting of the piece proceeded the arc table was depressed, this being provided for by the rods being arranged to slide downwards through the retaining brackets. The table was also provided with a counterpoise, which kept it up to the position of its duty.

The trouble with the machine as thus ordinarily constructed was that the cloth, especially

better up to its work, and still permit of its being depressed as the plaiting proceeds. The table can be allowed a little play in the way of swivelling, by which the cloth may be delivered a little easier to the grippers, or it may be locked fast by means of bolts fixed upon the brackets on which the table is carried and mounted upon its vertical standards. The counterpoise weights are lighter than usual, as in this arrangement the gripper is not required to press so heavily as usual in order to retain the cloth. The grippers are mounted upon the ends of levers loosely centred upon the shaft which carries the arm of the plaiting knife. The gripper arms are adjustable, and are regulated by a right and left-handed screw, for the lock-

ing of which in the right position provision is made. The gripper forms one limb of a bell-crank lever, the other carrying a pin, on which a bowl is mounted. This bowl works in a slot in a lever hinged to the radial arm, which is connected to a spiral spring and subject to its action.

In operation the knife arms are actuated by the crank, and the knife bracket is oscillated by a parallel lever, which brings it into proper position for passing below the gripper and laying the cloth. When the knife reaches the end of its stroke the gripper opens and the knife passes under it, but owing to the peculiarity of its construction the gripper never completely loses contact with the fabric, so that it cannot be withdrawn along with the knife.

The combination of the several improvements effected obviates the defects previously experienced in the working of the machine as constructed hitherto, the cloth being plaited more evenly in accurate lengths and without damage. Further information will be afforded by the makers on application.

Bleaching, Dyeing, Printing, etc.

METHODS OF SILK DYEING: THEIR PRINCIPLES AND PRACTICE.—V.

(Concluded from page 314.)

In carrying out the process just described, one or two points require attention if the best results are to be secured. In the first place the mordanting requires to be done properly and evenly; if this is not so, then no amount of care subsequently expended on the dyeing operation will give level shades; as a rule, however, this defect is of rare occurrence, the mordants generally going on quite even. Then, after coming out of the mordanting bath, the goods must be well rinsed to remove the surplus mordant: if this be not done then the excess of mordant which is not fixed on the silk throws down or precipitates out of the dye-bath much of the dye-stuff. This precipitate mostly settles down to the bottom of the dye-vat, but some goes on the silk in a very loose form and the fabric rubs a good deal in consequence; in either case there is a loss of dye-stuff and the colour on the silk is neither so deep nor bright as it might be. The silk must be entered into the dye-bath in the cold, the temperature being then slowly raised to the boil and maintained at that heat for one hour to ensure a full development of the colour. This method of working is more especially applicable to the dyeing of alizarine and the so-called alizarine colours on silk. In using these dye-stuffs it is a matter of great importance to cause the combination of dye-stuff and mordant to be formed slowly, otherwise the colour will not be fast on the fibre. The method is also applicable and is the basis of the process in use in dyeing logwood blacks on silk. In this instance, to obtain a good black it is essential that the mordanting be done first and thoroughly, and that the dyeing be the last operation in the process. The material should be well rinsed between the two operations, or otherwise much of the logwood will be killed by the excess of mordant and precipitated in a loose form upon the fabric or to the bottom of the bath and thus be lost.

Another plan of working with the mordant-dyeing materials is that in which the silk is first treated to a bath of the dye-stuff and then the colour is raised or fixed by a passage through a mordanting bath. This method is adopted in the dyeing of tannin blacks and cutch browns, and with some mordant-dyeing azo dye-stuffs, like azo-green, anthracene yellow C, alizarine yellow GG, flavazol, gambine yellow, Clayton cloth red, cloth red, etc. With tannin blacks, the silk is first steeped for some hours in a warm bath of the tannin material, catechu, sunac,

and galls; then, after wringing and rinsing, it is passed into a bath of iron—either the pyrolignite (iron liquor) or the nitrate of iron. The tannin bath may be used warm, and as the whole of the dye-stuff is never absorbed by the silk it may be used over and over again, simply adding fresh tannin matter to keep the strength up; when the bath gets too dirty to use it may be thrown away. The chief trouble in the continued use of tannin baths arises from a fermenting action which gradually sets in: this may to some extent be remedied by the use of some antiseptic, like carbolic acid or thymol. The iron bath should be used cold so that a too rapid combination of tannin and iron shall not take place, which would be the case if the bath were used warm; the iron bath gets rather too dirty to be used more than once. The operations of tanning and mordanting may be repeated, if necessary, to develop the full depth of shade, always taking care to wash well between each bath, otherwise the baths are liable to get dirty and unusable.

Cutch browns are dyed by working the silk in a bath of cutch, and then passing through a bath of bichromate of potash to raise the colour. The method of working is practically identical with that of the tannin blacks just noted.

There are many azo-colouring matters derived from coal tar that have the property of combining with metals to form insoluble colour lakes, and that may be used in the dyeing of silk with mordants, such as azo-green, anthracene yellow C, cloth red, cloth brown, Clayton cloth red, alizarine yellow GG, gambine yellow, etc. A good way of working with these dye-stuffs is to dye the silk first in a bath of the colour with a little acetic or sulphuric acid, then to enter into a warm bath of the mordant. (The best to use is chrome acetate or chrome fluoride; bichromate of potash may be used in some cases but as there is some risk of oxidation and destruction of the colour, the basic chrome salts named above are preferable in this method of dyeing.) The mordanting bath should not be too hot nor the time of working in it too short, otherwise the colour-lake will be but imperfectly formed and the resulting colour loose and dull. By careful working, excellent results may be obtained by this process, and, as a rule, the resulting shades leave nothing to be desired on account of fastness.

DYEING SILK BLACK.

Black upon silk, and blue black for linings and sealskin imitations, are generally dyed with logwood, but these dyes, not being acid-fast, do not stand the action of perspiration, of soap, or of alkalis. The Parisian Aniline Co. has recently patented a process of dyeing black upon silk which does not present those defects, and, as usual, is claimed to be much cheaper. The process consists in the employment of alizarine upon an iron mordant, together with a catechu and tin weighting. The boiled silks mordanted several times (according to how much charge is to be put on), with sulphate of iron at 30° Be., each time for two hours. It is then well soaped, and treated in a fresh bath with the quantity of yellow prussiate and hydrochloric acid, corresponding with the quantity of oxide of iron deposited upon the fibre, thus giving it a good bottom of Prussian blue. The silk is then placed in a boiling bath containing the quantity of catechu and tin salt required for the charge. In this bath the silk is manipulated for several hours, washed, and passed in a fresh catechu bath in order to perfectly combine the tin of the preceding bath with the tannic acid. After again washing the silk well, it is dyed upon a bath of 20-25 lit. water per each kil. of silk, and 15-20% of the weight of silk of soap, to which 20-50% alizarine is added according to the shade. The silk is entered at 65° C., which temperature is maintained for one hour, then raised to 95° and left there for three-quarters of an hour. The desired shade being obtained, the silk is taken up, soap is added to the bath, which is brought to the boil, and the silk re-entered and manipulated for half-an-hour, to give it lustre and touch. Then it is placed for a few minutes upon a weak soda bath at 30° C., washed, and

brightened with acid, a little glue, and emulsion of oil, and is finally stretched and dried.

FIGURED designs on aniline black grounds on wool, wool-and-silk, or wool-and-cotton fabrics, can be obtained, according to H. Köchlin, by first padding in a hot liquor containing 1 lb. per gallon of aniline sulphate; next, printing on a resist of 8 lb. of tin crystals per gallon of thickening; and then padding in a liquor of 1 lb. bichromate of potash, half gallon of acetic acid and half gallon of water. The black is developed in the cold; the fabric is then washed and soaped at 140° F.

LACTIC ACID IN DYEING.—An American firm is offering lactic acid in the form of a syrup for use in place of argol or tartars in dyeing. A writer in the *Textile Colorist* thus speaks of it: "The lactic acid had a specific gravity of 1.1061 at 60° F. It contained anhydrous lactic acid (C₃H₅O₃) 50.22%; hydrochloric acid, 0.02%; phosphoric acid, 0.00%; sulphuric acid, a trace. Alcohol gave a copious white with the acid, indicating the presence of albumen. I have recently tried some dyeing experiments with the acid in place of grey argols and obtained entirely satisfactory results. With logwood colours on wool the yarn has a much bloomier appearance than when grey argols are used. In the case of alizarine blacks, nearly all the experiments shewed that lactic acid was to be preferred to grey argols." This writer is rather enthusiastic; but one important point is overlooked, namely the relative cost of argols and lactic acid; and it is one that will have a material influence on the use of the acid in dyeing.

News in Brief.

ENGLAND.

Ashton-under-Lyne.

The Old Croft Mill, better known as Sutcliffe's, worked by Mr. Adamson, has been stopped for some time. But within the last month repairs to the building have been going on, and rumour says that Mr. Grier, ironmonger, and Mr. John Fletcher, cotton spinner, are arranging to start the mill at no distant date, pending the settlement of the Stalybridge strike.

Bacup.

The weavers of Bacup, at a meeting held on Wednesday, unanimously passed a resolution in favour of the adoption of a standard price list for weaving.

At Victoria Mill, Stacksteads, the whole of the drawing frames are being renewed. Mr. John Mason, Rochdale, has secured the order for the new machinery.

Blackburn.

The Board of Trade Commission, appointed to enquire into the recent explosion at the Bridgewater Mills, by which a fireman lost his life, report that Messrs. J. and W. Taylor, millowners, and their engineer, were solely to blame for not periodically inspecting the economisers which blew up, and which were greatly corroded; but in consideration of Messrs. Taylor paying the fireman's widow £100, they reduce the costs to be paid by Messrs. Taylor to £50.

A largely attended meeting of Blackburn employers was held on Monday night to consider their course of action in the present crisis. It was resolved to support the Federation by working four days a week, if two-thirds of the weavers and three-fourths of the spinners agreed to this course, until the present strikes were settled. Circulars were sent out on Tuesday, the answers to which were to be sent in before yesterday. Should any spinner or manufacturer feel indisposed to run short time after it had been decided upon, he would be allowed to run full time on paying 15d. per spindle per week, or 3d. per loom per week, as long as the short time lasted. The districts affected are those of Blackburn, Darwen, Accrington, Great Harwood, Rishton, Clayton-le-Moors, and Oswaldtwistle. In this area there are about 130,000 looms, and 2,250,000 spindles.

Bolton.

The Bolton Master Cotton Spinners' Association succeeded in obtaining the necessary signatures, representing 4,000,000 spindles out of 5,000,000, in favour of working four days a week to assist the masters in the other districts in the lock-out. The masters, it is stated, were never more unanimous, and more signatures were obtained than were required.

Burnley.

Mr. John Mason, Rochdale, has been favoured with the order for slubbing, intermediate, and roving frames by Messrs. Witham Bros., Finsley Mills.

Bury.

The Peel Spinning Co., Bury, has begun to run three days a week. This company is not a member of the Bury Association of Employers or of the Federation. A deputation from the Federation had an interview with the directors on Monday.

We understand that the Cotton Operatives' Association of Lancashire, Cheshire, Yorkshire, and Derbyshire intend to present Sir Henry James, Q.C., M.P., with an illuminated address in recognition of his services on behalf of the operatives in relation to the Cotton Cloth Factories Act and the Factory Acts Amendment Act. The presentation will be made in the Co-operative Hall, Bury, when the body of the hall, which is capable of seating 800 persons, will be reserved for representatives from the various unions. The time has not yet been fixed, but in all probability it will be just before or after the Whitsuntide holidays.

At a mass meeting of weavers in the Co-operative Hall, on Tuesday night, held to consider the question of "Who shall be responsible for the counting of picks and the weight of cloth in the fustian trade?" the following resolution was unanimously passed: "That in view of the fact that overlookers have given six months' notice that they intend to cease counting the picks or to hold any responsibility with respect to the weight of the cloth, in the opinion of this meeting the action of the overlookers in trying to remove the responsibility upon the weavers is unfair and unjust; and that this meeting pledges itself to use every legitimate means to defeat them when the time comes for action."

On Monday night the workpeople at Messrs. A. Ashworth and Sons' hat manufactory at Fernhill, Bury, came out on strike, owing to a dispute in regard to the payment for the trimming of a certain kind of hard hat. The hard hat employes had previously ceased work, being brought out by the union. On Saturday the employes posted a notice that the bodying department would not start work until further notice, as a portion of the employes being on strike crippled the other departments. A further notice was posted on Monday to the effect that the works would close on Friday the 6th inst. However, the employes held a meeting the same evening and decided to come out, with the result that operations ceased in all the departments on Tuesday night. The question in dispute is a matter of 2d. per dozen for the hats, which are a special class, not provided for in the list; and as both sides seem very firm in the stand they have taken, there is little prospect of an early settlement.

Colne.

On Tuesday, at Colne, the first prosecution of its kind under the Factory Acts took place. John Bannister, weaver, Nelson, was fined 5s. and costs for allowing a child to sweep a loom in motion. Factory Inspector Watt was satisfied that Bannister's employers used all diligence to see that the Factory Act was observed, and he wanted weavers to see that they were equally as responsible as employers for allowing young persons to clean machinery in motion.—Messrs. John Nutter and Co., the Victoria Mill Co., and Messrs. Carrington, Woods, and Co., all cotton manufacturers, Nelson, were fined, at Colne, for employing young persons after legal hours. Messrs. Nutter and Co. were fined 10s. and costs in each of three cases; the Victoria Mill Co. 10s. and costs in each of two cases; and Messrs. Carrington and Co. similarly in one case.

Cleckheaton.

A portion of Cleckheaton mill, the scene of the recent chimney disaster, was destroyed by fire on Wednesday.

The following is the report of the Chamber of Commerce for April:—"Wool and Worsted Spinning: There has been an improvement during April in this market. A very strong tone has been manifested at the current series of London Wool Sales. In yarns orders have been given freely, but at no appreciable advance on late depressed rates. But manufacturers report no increased demand for pieces, and it is probable that the increase of business will be of long duration—indeed, there has been nothing doing since the holidays. Cards: There is nothing special to report this month. Flannels: Merchants are more disposed to place orders as the season advances. Machinery and Engineering: April has been a very quiet month, with no improvement. Dyeing: Trade is quiet all round."

Darwen.

The Cotton Hall Spinning and Manufacturing Co., Limited, are making important alterations in their card room by the addition of new preparation machinery. The work has been entrusted to Mr. John Mason, Globe Works, Rochdale.

Mr. John Briggs, cotton manufacturer, died suddenly in the street on Wednesday morning. The deceased was crossing the road from behind the Millstone Inn, when he was seen to throw up his arms and fall full length in the street, his head striking the iron railings which surrounded the Market-place. A constable went to him, but found him perfectly helpless. He was con-

veyed to the police station, where he died under two hours time. He was very well known throughout the district.

Haslingden.

It is expected that in the course of next week the large weaving sheds in Haslingden will commence short time working. The present meagre margin between yarn and cloth means a loss to local mills every day they run, and as no reduction of wages can be made, the only alternative is to run short time until the working margin increases.

Heckmondwike.

The following is the report for April of the Chamber of Commerce:—Blankets: Trade has been quiet in this branch so far this year. Enquiries are, however, beginning to be made for samples for next season. It is difficult to get satisfactory prices. Carpets: Looms have been fairly well employed up to the present time, but orders are rapidly being completed, and repeats come in slowly. Railway rugs: There is little more doing in railway rugs, but trade is not brisk. Seal-skins: There is about the usual trade doing for this time of the year, but it is only of a retail character. Dye-ware: Business quiet during the month. Engineers and ironfounders are fairly well employed at present.

Heywood.

The Allert New Mills Co., Ltd., have placed their order for drawing frames with Mr. John Mason, Rochdale, who is also supplying drawing and slubbing frames to the New York Mill Co.

Hindley.

Messrs. R. C. Howarth and Co. have appointed Mr. Edward Hope as manager of their new Marsh Brook Mill. Mr. Hope comes from the firm's Bolton mill.

Keighley.

Stockbridge Works, along with the large wool-combing plant, at present run by the firm of Messrs. Isaac Bailey, Limited, are advertised for sale.

Leeds.

By a fire which broke out in a shed at College Mill, Birstall, owned by Mr. Ben Squires, mungo and shoddy dealer, damage was done to the extent of £500, which is covered by insurance.

Manchester.

Messrs. John Fletcher Hill, calico printer, Mosley-street, and John Dewhurst Milne (Messrs. Kendal, Milne, and Co.) have been placed on the commission of the peace for Manchester.

We regret to have to announce the death of Mr. E. S. Jaffray, the well-known dry goods merchant, of New York. Mr. Jaffray, whose firm has a warehouse in Manchester, was a large buyer of English goods. The funeral took place in New York on the 27th ult.

Nottingham.

Early on Saturday morning a fire broke out in the extensive lace curtain manufactory of Messrs. Wilkinson and Co., known as the Anglo-Scotian Mills, at Beeston, near Nottingham, and was not extinguished until damage roughly estimated at £100,000 had been done. The fire is said to have originated through the flame of a candle, held by one of the workmen, whilst adjusting the threads of his machine, igniting the cotton on the frame. There was an immense quantity of lace curtains in stock, and the flames spread with great rapidity. The local fire brigade was soon on the spot, and was afterwards supplemented by the brigade from Nottingham; but, in spite of their efforts, the five-storied wing of the factory in which the fire broke out was soon ablaze from basement to roof, and quickly became a mass of ruins. Several hundreds of workpeople will be thrown out of employment. The loss is partly covered by insurance. It is a singular coincidence that exactly six years previously, to the day, Messrs. Wilkinson and Co.'s premises were destroyed by fire. The machinery destroyed includes eight curtain, four Levers, and 250 sewing machines.

Oldham.

The new secretary of the Ellenroad Spinning Co. is Mr. James Button, cashier from Messrs. Samuel Radcliffe and Sons, Rochdale.

Messrs. Platt Bros. are carrying out alterations in the mules at the Lees Union Co.'s mill, and converting the twist mules into welf, besides fixing new jennies.

Messrs. John Hetherington and Sons, Limited, machine makers, Manchester, have received an order for twelve pairs of mules for the directors of the Smallbrook Spinning Co., Shaw.

Mr. Joseph Turner, late of the Equitable Spinning Co., has been appointed engineer at the Hathershaw Spinning Co., vice Mr. John Manfield, who has gone back to the Central Mill.

We have, on several occasions, reported as to the proposed extension of mill building in this district. For the moment the depression in the cotton trade has deferred any further building. The matter, nevertheless, is being quietly pushed forward. Quantities have been issued for a new mill, the name of which is said

not to be stated in the particulars given, though it is reported as intended for a mill which will be the largest erected in the Oldham district.

A correspondent writes:—"The Textile Mercury articles on the lock-out in the cotton trade have been eagerly scanned in this district, both by those who side with capital and by the operatives. The former have very favourably commented on the articles, and have quoted the opinions advanced in discussions on the question. On the other hand the operatives have watched them because they consider them as a kind of employers' barometer, and are glad to read what the other side has to say."

Mr. Thomas Wallace, who has retired after a 31 years' connection with Messrs. Platt Bros. and Co., machine makers, Oldham, has been presented with a walking stick at the hands of the millwrights who were employed under him; while on behalf of the directors, foremen, etc., at the works, he has been the recipient of a beautiful illustrated album, with photos, accompanied by an address. Mr. Wallace we know has well earned these tokens of respect, and in his retirement we trust he will obtain that well-earned repose to which he is entitled.

At the shareholders' meeting of the Belgian Spinning Co., on Monday, the chairman (Mr. John Waterhouse), stated that the loss of £11,514 for the three months had come about by being "tempted to try and better their position. When they had got some large orders on their books, the directors thought it their duty to cover those orders, and had done so, and something more, feeling certain that things would come right. Unfortunately, however, things went wrong, and prices, instead of rising, continually dropped, and consequently brought them to their present position. No one was more sorry than the directors, but it could not be avoided now. It had taught them one lesson, however, and that was never to bother with futures any more. He assured them that he, personally, would never again be a party to it." A shareholder remarked that it was most strange and extraordinary that the loss should top all others. To this the chairman answered that if his information was correct they had not won the cake, as there were others much worse off. Other shareholders had a pitch into the board, and after steam had been blown off, it was decided to give the directors power to borrow money on mortgage of the mill premises, etc., if it was necessary.

Ossett.

On Saturday last eleven students sat in the City and Guilds examination in cloth weaving, five in the Honours and six in the Ordinary Grade.

Radcliffe.

The breach in the ranks of the weavers employed in the coloured goods trade continues to widen. The old Weavers' Association is being reconstituted and thoroughly re-organised. It is said that the union is worth £1,200, and that a determined effort will be made to get a better list than the Bury Association has been able to get them. The Bury Association's officials have now made known the result of the poll of their members which has been taken for or against the new list, with the result that 712 voted for and 335 against, while 224 remained neutral. Mr. Joshua Barrows, of Padiham, speaking at Bury on Tuesday night, said the Radcliffe new list was 27 per cent. better than Colne, taken all together.

Ramsbottom.

At the end of last week Messrs. Hepburn and Co., of The Square Bleachworks, notified to their workpeople that they still adhered to the proposal to make a reduction of 10 per cent. in wages. The workpeople, having had previous intimation of this intention, consulted the Bleachers' Society, who decided that if the firm should persevere in their determination they would draw out the workpeople. The employes, therefore, gave in their notices, which will expire at the end of next week. It is stated that the firm intend to lock up the works for a time, and have given the hands notice to this effect.

Stockport.

At a meeting of the Stockport Cotton Employers' Association, held on Monday, it was reported that the manufacturers of the association who are spinners had resolved to run three days a week.

The shareholders of the Palmer Mills Spinning Co., Ltd., held their quarterly meeting on Thursday evening in the Mechanics' Institute, Stockport, when the following directors were present: Messrs. J. G. Johnson (chairman), W. L. Eskrigge, J.P., J. Burtinshaw, W. Bell, and J. Noden. The directors' quarterly report stated that the profit amounted to £1,447, after allowing £1,800 for depreciation. The profits added to the account brought forward from last quarter, £3,416, left a disposable balance of £4,864, which enabled a dividend of 10 per cent. to be paid. On the motion of Dr. Hudson, seconded by Mr. Simpson, the retiring director, Mr. J. Noden, was re-appointed.—Mr. M. Travis, in seconding a vote of thanks to the

chairman, referred to the satisfactory financial position of their company, and stated that the 101 mills which were worked by limited companies in Oldham had only been paying an average of one per cent. during the past fifteen years.

Tyldesley.

On Saturday afternoon a fire broke out in a large storeroom at Messrs. Caleb Wright and Co.'s Resolution Mills, where about £35,000 worth of raw cotton was stored. In a very few minutes a number of jets were got to work. The flames, however, spread with great rapidity, and in less than ten minutes they had made their way through the roof. It was not until nearly two hours had elapsed that the fire was extinguished. The amount of damage is not known, but the destruction of cotton was very great. Two of the mills belonging to the firm were burned down, and damage done to the extent of £30,000, in September last.

SCOTLAND.

Arbroath.

Notices have been posted in the works of Mr. Andrew Lawson, intimating that from and after to-day the Baltic Works will be closed from Friday at dinner-time till Monday morning at ten o'clock, and that the other works will be closed on Saturday. Both of the principal works in Arbroath are now on short time.

Blairgowrie.

Notice has been given of reductions of wages of from 4 to 7½ per cent. in Erich Linen Works, Blairgowrie.

Craigie.

For the last four weeks Craigie and Logie Mills have been running 50 hours a week, the works being closed from Friday night till Monday morning. It is probable that short time may continue for some time.

Dundee.

It is said that one of the smaller concerns in the Dundee trade is about to be converted into a Limited Liability Co.

The condition of jute cargoes recently discharged at Dundee Harbour has not been altogether satisfactory. One or two of the vessels which have arrived within the past few weeks have put ashore fairly good cargoes, but the damage to the jute brought by other vessels has been heavy. Merchants now hold out every inducement to shipmasters to bring home cargoes in as good condition as possible by offering gratuities when the jute is landed in a satisfactory condition.

Messrs. A. P. Mathewson and Co.'s Grove Mill is to be closed next week to permit of extensive repairs being effected, and it is very likely that when operations are resumed they will cease each week on Thursday night. Up to this point the mill has been going full time. The lessened production in consequence of the short time is now beginning to be felt on the larger markets, and it is hoped that an early result of this will be better prices and an increased demand. The present reduction on working hours on Dundee is equal to about a fourth on the total output. When the mills and factories are running full time there about 25,000 bales of jute, equal to 4,500 tons, cut up per week, while at present the consumption is not more than 18,000 bales, equal to about 3,400 tons.

Glasgow.

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

	India and China.	U.S. and Canada.	W. Indies & S. America.	Australasia.	Africa and Egypt.	Continents.	Totals.	Totals for year to date.
£94,665	6,621	2,647	1,177	1,177	1,177	48	49,722	1,504,297
229	11,669	85	1	110	1	1	12,123	331,020

The following are the total values of the exports for the same eighteen weeks of last year:—Cotton, £1,453,350; linen, £302,971.

A very successful session of the Glasgow Technical College weaving branch was closed last week by the usual competitive examinations. The students in attendance during the past winter session numbered 58, of whom 29 entered the competition for the diploma. A prize is given for a sample of cloth wholly designed and woven by the competitor. This prize—one of distinction only—is keenly competed for every year, and many excellent and novel specimens have been entered for competition this year. Prizes are also given for the best kept design and exercise books. The promoters desire to complete the course of study by adding a department for teaching dyeing and finishing, so that the school may be on an equality with the great Continental institutions, which, supported by the municipalities and Governments, have done so much to promote the successful rivalry of the foreigner. In this country private enterprise and liberality almost alone have to be relied upon.

Kirriemuir.

The effect of the excessive depression in the jute market has extended to Kirriemuir, for notices are posted in the two factories—Messrs. Ogilvy Brothers, and Messrs. J. and D. Wilkie's—that, till further notice, the factories will be closed on Saturdays. This is the first time since these factories were started—over twenty years ago—that such a misfortune has been experienced in Kirriemuir, which says much for the energy with which the works have been conducted.

IRELAND.

Belfast.

At a meeting last week of the Belfast Mechanical and Engineering Association (Mr. Jordan Nicholls, president, in the chair), a paper was read by Mr. William M. Bell, science teacher at the Working Men's Institute, on the transmission of power. He made a critical examination of some of the modern means of transmitting power from the prime mover to the various departments in a mill, making a comparison between spur gearing, belts, and ropes. Mr. Bell said that the removal of some of the difficulties in driving by toothed gearing and flat bands is a very desirable end to be attained, and with this object in view the late Mr. James Combe, of Belfast, in the year 1860, made some successful experiments in the way of transmitting power by means of ropes working in grooved pulleys. No doubt round bands working in grooved pulleys had been used for communicating power in small machines, but to him belonged the honour of being the first to apply this method to main driving purposes. After describing in detail some of the different points to be observed in the good working of ropes, Mr. Bell went on to say that by the patents of Mr. Barbour rope-driving can now be applied in any conceivable position. Diagrams and working models were shewn in demonstration of this. The lecturer concluded by stating the following advantages which rope driving possesses over toothed gearing and flat bands:—Total absence of vibration and noise; lighter buildings and fixings; less cost; diameter, face, and speed compared, rope pulleys will transmit more power; less risk of a breakdown. The paper gave rise to an animated discussion, in which the following members took part:—Messrs. Nicholls, Gamble, Kirk, senr., Morrison, M'Master, Dixon, and Breach.

Miscellaneous.

ENGLISH BROCADES AND FIGURED SILKS.*

By C. PURDON CLARKE, C.I.E.

The subject of my paper being restricted to those varieties of woven silk known as damask, brocade, and brocatelle, it is unnecessary for me to instance the many proofs of the great antiquity of silk culture, and of the manufacture of plain woven silk fabrics. We can concede the claim to its origin to China, where, it is related, twenty-six centuries before Christ, the rearing of the silk-worm was the pastime of royalty; and the Empress Cse-ling-she is credited with the invention of the first loom. Whether that loom was for plain weaving, or capable of producing figured stuffs, we are not informed; but it is probable that 1,000 or perhaps 2,000 years elapsed before the draw-loom developed sufficiently to produce the ancient examples recently found in Egypt. It is true that early writers describe woven stuffs, rich in pattern, like that which Homer gives to Ulysses, where a decorative hunting subject, interwoven with a gold ground, presents to the mind's eye a garment not unlike a *shikargah*, or hunting ground pattern of Benares or Ahmedabad; yet the weight of probability is in favour of such fabrics having been figured either by hand embroidery, or woven in a tapestry loom, between which and the simplest form of figure weaving loom there is a gulf which must have taken many centuries to bridge.

The difference between these two methods of weaving is great, and yet so little known, even to many whose connection with the arts leads them to continually mention, and often to confuse, the two under one name, that a short description of both these processes is necessary.

In true weaving, whether of silk or other fabrics, the loom is a framework carrying the warp or threads which run the long way of the stuff, and the whole process of weaving consists in working a transverse thread—the weft or

shute—which, passing alternately over and under the threads of the warp, forms the structure of the fabric. It is probable that, in the first looms, the needle was employed to carry the thread for this purpose, and this needle, working laboriously in and out each warp thread, produced a coarse fabric at a slow rate, and of very uneven texture. Then came the invention of the heddle harness and reed, in which, by pulling a string or pressing a lever with the foot, alternate sets of warp threads were raised or depressed, and the needle, becoming a shuttle, shot the whole width of the stuff at one operation in less time than it took before to turn round a single warp thread. The earlier process had been as simple as basket-making or, at the utmost, the plait of a straw mat; but now the true loom was started, and soon, by increasing the number of heddles, and changing the sequence of the alternation of warps, diagonal, chevron, and diaper patterns were formed, and, gradually, more complicated figures produced.

The tapestry-loom is the primitive form of the machine, and, as it was 3,000 years since, so it is to-day, whether working at the Gobelins or in Asia Minor and Persia—where the *kehlim* carpet and curtain is the product of the same loom, and made in the same manner. In this we have the frame and warp threads, but there is no through weft, excepting where a single stripe of pattern crosses the whole width of the stuff. The process of manufacture is very simple, the pattern being produced by interweaving by hand the various coloured threads, in a manner similar to the making of a basket; and as the needle carrying each colour, after travelling its width, has to return along a parallel path wherever a difference of colours occurs in a straight line in the direction of the warp, there is no connection between it and the next colour, leaving open slits in the stuff in wall tapestries—where such lines, in architectural subjects, are of frequent occurrence—an amount of sewing has to be performed to hide this defect in the weaving. For this reason the *kehlims* of Syria and the *dharris* of India have no lines in the direction of the warp, but form patterns in zig-zag.

The hand-made carpet looms of the East, and the shawl looms of Casuiniere, are half-way between the tapestry and the figure-weaving loom. Like the tapestry, the pattern is worked in and out by hand; but they are true looms in having heddles to separate the warp-threads, and shuttles to throw a weft-thread, which in this case—hidden beneath the pattern—serves to bind the fabric together.

We can only conjecture respecting the class of woven fabrics described in the Odyssey and the Iliad, but we can now speak with positive certainty of the looms as far back as the second century, owing to a valuable kind of early stuffs at Akhmim, in Egypt—from which a large and valuable collection can be seen in the South Kensington Museum. Here we have weaving in a state of perfection which has been little improved upon in our days, and each type of loom work is well represented in this collection. Amongst these fabrics are some which are the earliest examples of brocade weaving yet found, representing the period commencing with the Ptolemaic dynasty, and ending only after the Saracen conquest of Egypt.

Then, in our own England, the dresses which, at the beginning of this century, were found enveloping the body of St. Cuthbert, at Durham, add a 10th century link to our chain of examples. These stuffs were probably the work of Saracen settlers in Sicily. An examination of this series of brocades shews that, even at this early period, a whole system of mechanical weaving was practised; and it is this that should be clearly understood, and not in any way confounded with the weaving of tapestry work.

In the early figure looms, only geometrical figures with small repeats were worked; but as the patterns grew fuller in design, the system of heddles and harness, a series of strings and levers, had so complicated the loom, that it became impossible for the weaver to remember the right sequence of changes in shuttle and lever, and then an elaborate system for the transfer of a drawn pattern to a pedal and

* A paper read before the Society of Arts, April 12, 1892.

shuttle notation became necessary; and the weaver merely performed mechanical duties, whilst the actual artistic work was done by the moulder of the loom, before a single throw of the shuttle was made.

An example of the weavers' notation is here to-night, and it is absolutely certain that a similar system was used in a piece of Damascus brocade, found at Akhmim, from a trifling error in each repeat, which could only be due to an error in the notation.

Having traced the figure-weaving loom back at least to the second century, I must now speak of its introduction into England, and about this can only say that the date is still very uncertain. It is not an industry suited to small production, and by no means a village craft, capable of being carried on by single artisans in their own homes. At the present time as much as several hundred pounds—after three or four months' work of men in several branches of trade—is required before a silk hand-loom can be set in working order, to produce some of the brocades exhibited here to-night, even in one of the humble dwellings of a Spitalfields weaver, who is the owner of the loom-frame only, and not of the jacquard or mouting; and in India, to this day, the people who set up a loom for the weaver of *kincob* take 45 per cent. of the gross selling price of the material for their labour. The system by which such a costly trade could be carried on by artisans in their own homes is, as I have already stated, by the means of capitalists, who, in old times, were often the retailers.

As purely an article of luxury, a knowledge of the fashion of the period is all important in commanding a sale for the production, and as no weaver could undertake the risk of weaving a design unless sure of a sale, the capitalist became the actual manufacturer, and the weaver little more than a part of the mechanism of the loom, and, paid by the piece, was well rewarded when he joined industry to dexterity. It was only at the commencement of direct European trade with the Indies, and the introduction of silk culture to Italy and France, that the lowered price of the raw material enabled it to be imported in sufficient quantity, and then silk-weaving became a leading industry in France, and was afterwards introduced into England, but was only established as an important manufacture in this country upon the immigration of the Flemish weavers in the 16th century. It was at this time that we begin to find considerable records of figure loom weaving, amongst which is the grant of a Charter by Queen Elizabeth, in 1564, to the Dutch and Wallon settlers in Norwich.

Three hundred families of these refugees were settled there by the Duke of Norfolk, and, with other trades, they introduced damask, flowered and striped silk weaving. A hundred years later, the revocation of the Edict of Nantes strengthened our silk trade by the expatriation of a large number of French weavers, and to these is attributed the foundation of the silk industry of Spitalfields. The Flemish and Huguenot weavers formed settlements in various parts of the country, and besides London, Kent, Essex, and Norfolk became seats of manufacture, whilst others, in fewer numbers, migrated north and west. Several of these remain unchanged, and Spitalfields still takes the first place in the country for hand-loom work, whilst the figure-loom of Canterbury and Norwich have ceased to work, the latter having, early in the century, rivalled and even excelled the shawl weaving of Cashmere. The figured ribbon manufacture at Coventry has survived many vicissitudes, whilst Macclesfield, starting with a lighter class of fabrics, is becoming a centre which will eventually furnish dress and furniture silks equalling those of the southern factories. Nor ought I to forget to mention the hand-loom at Leek, the power-loom of Halifax, of Patricroft, near Manchester, Glasgow, and other rising places in the north—the great mechanical country—where the future of silk will probably be secured. The looms used by the early weavers remained unchanged until the beginning of the present century, when an ingenious Frenchman sent to a Workmen's Exhibition, at Paris, a machine for simplifying net and ribbon

weaving. Through the advice of General Carnot, the grandfather of the present President of the French Republic, Napoleon I. instructed this workman to attempt the application of his invention to the draw-loom, which had been already improved by Vaucanson fifty years earlier. The great mechanical genius of Jacquard was equal to the task, and the overgrown complication of the draw-loom and its attendant boys became simplified, and by adapting the fly-shuttle—which had been used in England fifty years earlier—labour in producing wide stuffs was reduced to a minimum. By Jacquard's system the machine automatically read the pattern notation, instead of having it read by the draw-boys, and so perfect is this loom that, although power looms will produce the bulk of brocade and damask in the future, the hand-worked Jacquard loom, in its present form, will probably always remain as the handiest for the higher-class work.

This manufacture, so wide-spread for a time, did well, and until the treaty of 1860 opened the market to the competition of foreign producers, a large population was comfortably maintained by the practice of this beautiful art. In 1825, London possessed over 24,000 looms, employing 60,000 hands; but after a few years of free trading, the number of looms dropped to 1,200, and the weavers to 4,000. A few years before 1860 our imports of foreign silks were but £2,365,415. In 1889, they had grown to £11,000,000; and it is to secure again to our wage-earning population a large proportion of the enormous sum which annually is thus sent abroad, that our best endeavours are needed.

It would be of great assistance to this good work if it was possible to dispel the misconceptions and prejudices now retarding a natural development, which may rival that of the great cotton manufacture of Lancashire early in the present century. The first of these is that the English silk is dearer than the French; and this is so wide-spread that even our manufacturers share it with the public. The brocades and figured silks you see here to-night cannot be made or sold by either France or Germany at the price that these are sold for; imitations can, and to explain this I must refer to an unpleasant matter, but one which is of vital importance, not only to our manufacturers, who lose the trade, but to the buyers of the foreign substitute by which our goods are undersold. To render silk capable of being dyed, certain operations of scouring and washing have to be gone through, and these result in a loss of weight of as much as one-fourth; therefore, a skein weighing 16 oz., after dyeing, is returned to the weaver with only a weight of 12 oz. To make up for this loss, it was the practice to use certain chemical substances, which, actually combining with the silk, took up the dye, and, for a time, the weavers were content to receive back their skeins without much loss of weight. Rival dyers, however, soon competed with each other in increasing the weight and substance of the silk yarn, and, by leaps and bounds, in black silks, this increase went on, till 16 oz. of silk was returned by the dyer weighing 36 oz., then 50, and, eventually, 100 oz. For a long time, only black silk would bear this load, but the discovery of the use of salts of tin enabled the dyers to apply it to other tints; and the French, who have always shewn great cleverness in applying chemistry to the arts, turned the process to such profit, that they are almost able to dispense with the raw material. By the adoption of these and other silk substitutes, the foreign manufacturers are enabled to produce fabrics which, sold as silk, make our dress and furniture stuffs appear dear in comparison; but, when we insist upon having the same quality in pure silk, fast dyes, and close weaving, then our own productions beat the foreigner's in price, and will, I trust, before long, in design also.

Another prejudice is, that for beauty of design we must always remain inferior to the French. This leads me to place before you a problem. I have recently had to compare French and English weavers' pattern-books, dating from 1750 to the present time, and I found periods when there was no difference in quality, and then, both running off, apparently in rivalry, in an endeavour to produce the crudest colouring

and most vulgar designs the mind of man could imagine. In these the French, with their superior daring, especially in wrong-doing, excelled, and the patterns of the time of Louis Philippe were even worse than ours. With the second Empire, however, they went ahead, and although we followed closely, it was but following, except where original paths were struck out by irrepressible genius, and our manufacturers—or rather the middlemen who dictate to them—were forced by public approval to turn from France and unwillingly submit to the dictum of an English designer. Thus Owen Jones, in the "fifties," tried to free ornament from the restraints imposed by the attempted representation of natural objects. His work was beautiful, but it was the beauty of a snow crystal—wanting in human interest. Then Dr. Dresser, who, at first following in the same path, re-admitted natural forms, and was one of the first who shewed British manufactures in many trades that the public would accept and pay good prices for original English designing. But the great change came as a tidal wave; and it would be doing injustice to many, if I attempted even to give the leading names of our artist designers of the past 20 years. Nor does time permit me to even sketch the strong influence of Japanese and Persian art, and the result of the flooding of our markets with the textile treasures of Turkey after the war of 1887. All these have helped to enlarge our ideas on the beautiful in Art, and to free us from the forcible adherence to a few fixed and often lifeless styles. It is in this path that we owe so much to the great and beneficial influence of the work of William Morris, in silk as well as in many other classes of applied decorative design; and it will be only when the history of this century comes to be written, that the greatness of this work will be more evident and better understood than it seems to us at present, especially when the importance of the social and economic principles involved will be acknowledged, and an art, ennobled and elevated, will stand clear from foreign styles of design which often, at their most prosperous periods, were associated with vicious and rotten conditions of society, as false as their own art principles.

There is another disability from which the trade suffers in its competition with the foreign producer: that is, the evasion of taxation by the foreign goods, and this to an extent which is so considerable that, if the Chancellor of the Exchequer could only devise means to prevent what is actually a gross fraud, not only would the competition be weakened, but our revenue would be strengthened, probably to the extent of some millions. The Spitalfields loom-master not only has to bear the whole brunt of imperial and municipal taxation in his factory in the East-end of London, but again in his city office. He has, in addition to the cost of an extensive establishment, to pay his full taxes, and also the income tax on his profits, in many cases in such a manner that although one business, he is practically paying taxes twice over. I am informed that business to the extent of many millions per annum is carried on in the City of London, and the leading commercial cities, by agents of foreign houses, who pay diminutive rents for small offices, do all their business with samples, keep no books, receive no payments in England, and only pay income tax on a fixed salary. In some cases these people are suspected of being partners of a foreign house; their share of profits is not declared, but accumulates in their own country until, after some years of successful trading, they return to it. This not only applies to the silk trade, but to many others; in fact there are few trades in the City where these foreign agents do not swarm and carry on business, receiving the benefit of our protection in all parts of the world, whilst they practically evade sharing in the cost of the Empire, which falls so heavily upon our own people.

Another misconception is that hand-woven silks must necessarily be so much more expensive than those produced in the power-loom. Actually, in high-class work, the difference is not so great, as, in both, the cost of the raw material and the setting of the pattern in the loom remain the same, and these, unfortunately for the weaver, are the principal items in the

value of a yard of silk. With respect to the power-loom, the work produced by it differs very little from hand work, as each loom is attended by an experienced weaver, who, whilst giving the same watchful attention, is saved the heavy labour with the foot-pedal which is a common source of permanent injury to many.

As I have already shewn, the beauty of the pattern does not depend on the weaver, his duty being solely to perform certain actions which require vigilance of eye and dexterity of hand, but little thought. The softness, or rather looseness, of some hand-produced goods can equally be obtained in power-weaving, but this quality, dear to artists, is not regarded by the manufacturer in the same light. The hand-woven linen fabrics—some named after our greatest art critic, which are selling at prices equal to silk—could equally be produced by power; and many of the old Venetian and Turkish brocades are the result of work so bad that a power-loom would have to be out of order to perform it, and the yarn not regularly spun by perfect machinery, or even a trained hand-spinner, but twisted somehow from a distaff from imperfectly prepared fibre.

(To be continued.)

LABOUR, CAPITAL, AND BRAINS.

In the course of an article in the *Speaker* of Saturday last, on "Labour, Capital, and Brains," Professor T. Clifford Allbutt says:—Every thoughtful economist knows well that the main factors of production are not "capital and labour" alone; nay, that while these factors are indispensable, there is a third factor—if possible, more essential, or more intimate than either. Yet we stand in no fear of contradiction when we assert that current writing and current talking proceed upon the assumption that "capital and labour" are the only main factors of production. In our journals and magazines, instead of such a general heading as "Industry," we find invariably that "Capital and Labour" is the title of the chapter which deals with this matter. All employers are "capitalists," and capital and labour are regarded as the parents of "production." We are told, and told with some truth, that the use of the capitalist is to make advances upon future products, and thus to enable the labourer to live until these products are realised. If this be all, as these products come to market and profits accumulate, the labourer may well assert that these profits are "built up by his efforts," and that the share of the "capitalist" should consist only of the interest due upon the use of his advances, together with a payment for "management." Now the "manager" may not be, and often is not, the owner of the capital; so that in this common case it is assumed that the "capitalist" is merely an expensive and troublesome appendage to capital, and that were capital provided, say, by the State, or by co-operation on some narrower basis, it would be released from this appendage, and the labourer would receive the profits which his hands have made, less interest and the salary of "management." On this belief great schemes of State workshops and of co-operative associations have been dreamed of, and in a measure realised. How far, on the other hand, the hopes based upon this defective reasoning have been dashed our readers know too well. With a few doubtful exceptions, "co-operative societies" for production have failed; and if "limited companies" have in a measure succeeded, it is equally well known that failures and heavy losses have been innumerable, and the successes not only far below the estimates of promoters, but, in so far as they persist, have in great measure been the successes of companies carrying on pre-existing schemes—successes, one may say, *per vim inertiae*. Associations for mere distributive purposes—such as railways, banks, stores, and the like—are of course left out of consideration; in these the several rewards of management, capital, and labour, are easily regulated.

Now surely capital and labour, whether taken separately or together, are but brute forces, and can produce no fruit. For this end there must be a shaping process—a function composed of foresight and inspiration, and exercised in freedom; a function, which, for lack of a better term, we may call Enterprise. Let us ask whence comes this factor in production. A company of shareholders clearly cannot act promptly, vigorously, boldly, irregularly, or ingeniously. A board of directors may carry on a tradition, may excel in organisation, and may have some slow power of adaptation, but can never adapt themselves rapidly to wholly new conditions or suddenly revolutionise their methods. To run those risks, which at certain moments are the summit of wisdom in a private person, would be impossible to a committee entrusted with the interests of a body of shareholders, were even the committee unanimous. Speaking generally, the management of share-held capital must be jog-trot, and

will succeed only so long as the original formative impulse survives, or so long as the business—such as banking, say—is little more than administrative, or has to deal only with familiar difficulties. But in production these conditions rarely continue more than two generations. No doubt there are a few manufactures—such as the production of certain kinds of boots and shoes, of livery cloths and the like—which change but little; in these, however, profits tend to fall to small margins as competition increases and the workman's first charge is relatively large; the business, in fact, becomes simply distributive. But in most cases markets are capricious, tariffs change suddenly, profits diminish, better machinery must be invented and the old ruthlessly sacrificed; buyers tire of old patterns or stuffs, and the eye must be caught by some novel and striking combination. Mills at home must be abandoned, and the business transferred to a foreign soil, and so forth. Producers must meet such shifting conditions by bold, ready, and even preposterous revolutions, by great immediate sacrifices, by inexhaustible inventive capacity, or by foreign adventure; and these will become not less, but more and more necessary as the Western world grows older, and its wants more complex and imperative. Without the factor which we have called Enterprise, no great productive business was ever begun, and no such business can long continue to thrive. In the larger fields of production capital without Enterprise is sterile, labour is sterile, and capital and labour united are sterile.

Now where is enterprise to be found? Speaking generally, it is to be found in individual men only, men who are natural "sports" of a more or less rare and highly specialised kind. Boldness alone, strength of purpose alone, even invention alone, will not fructify; a man must be found in whom such qualities are combined—a rare combination. The great producing trades of the North of England could not have arisen without capital, nor without labour; but still less could they have come into being without Stephenson, Armstrong, Whitworth, Bessemer, Fairbairn, Lister, Holden, Salt, Donisthorpe, and men like these. It is said of one of these, that on his methods becoming known, he broke up all his machinery at a stroke and invented afresh; of another it is known that after passing middle life he twice ejected and reconstructed the whole of his vast machinery; of another, that he had transferred his vast mills abroad whilst his rivals were rubbing their eyes. Could the blind force of labour, or the blind capacity of money, have led to the magnificent development of Elswick, or of Manningham Mills? So scarce are these natural "sports" that such a man is said to be paid twelve thousand a year by the members of a great English firm which has outlived its originators, but continues to be under the control of one family. It is idle to prize these qualities, seeing that one such man may appear in about a million births, and that he will command an enormous reward so long as supply and demand regulates prices—we speak provisionally. Now this need of extraordinary men for creative purposes, and of capital free to their free hands, means not only a large reward for a rare and fragile article, but also for great risk of capital always, and great loss often. It may not be true that three fortunes went to Lord Masham's last success, but such is the common history of events of the kind. No calculations can be free from error; all schemes gang more or less agley; and if schemes are nevertheless to succeed, there must not only be a great schemer to force failure into the paths of success, but also a great command of capital placed freely, even recklessly, in his hands to make or to mar. Labour no more made the Forth Bridge than the gardener's boy who drills in the seed makes leaf, flower, and fruit. Money and men are the sinews of war, but battles are won by great captains.

Still, it may be objected that if capital and labour be found, efficient management should guide the combination to happy results. This is only true in so far as the business handled approaches to the "stationary state"; and when this becomes generally true of English fields of production, England will be nearing to the "stationary state." The "stationary state," however—once a dream of some economists—in real life has never been, and the biologists have taught us that in living functions it can never be; to cease to advance is to decay. Now the best friends of democracy, those who know that every form of government has its own faults, see that in democracies there has been—and in modern democracies there now is—some jealousy of pre-eminent men, or, at any rate, of more than one such man. We find, however, that Nature's way is to make great works depend upon great men, but to make these rarely, and therefore to make them costly; moreover, the breed cannot be "seeded on," as are choice varieties in the flower-fields at Reading. But democratic societies even for municipal purposes need great works—works rarely requiring perhaps the higher kinds of adventure, but often more than an ordinary administrative intellect to plan and develop them; yet such societies too often act as if they had rather see many thousands of pounds spent more or less ineffectively, and many a good cause lost, than pay

a few more hundreds to secure servants of exceptional ability.

"Why should one man having but two eyes and one pair of hands be paid more than another who is possessed of the same furniture, and needs as much meat and drink?" Well, this is a subject which modern societies must consider, and consider rightly, or fall behind; if they are ignorant at present, this is due not to the darkness of history, but to their want of stomach for its lessons.

THE EIGHT-HOURS DAY.

The following letter on this subject from Mr. H. H. Champion, the Socialist, appeared in *The Times* of Tuesday:—

SIR,—There can now be no doubt that the legislative proposal which most interests the working classes is that for the reduction of the hours of labour. It may be admitted that a large proportion of the crowd in Hyde Park on Sunday were indifferent or merely curious, but it cannot be denied that no proposal, which at present has a place on the programme of the Unionist or of the Gladstonian party, even if backed by wealthy political organizations, could produce a manifestation of popular enthusiasm comparable to the enormous and orderly procession that streamed into the park on the 1st of May.

I venture to ask you to allow me to explain to your readers what I believe to be the true meaning of this movement. It is desirable that some one should do this, because the inconsistencies and contradictions of some of the advocates of the eight-hours day are hardly more confusing than much of the comment and criticism in that portion of the Press read by the classes which have few opportunities of getting at workmen's ideas first hand.

It is the custom of some politicians, who feel the need of obtaining the labour vote in their constituencies without alienating that of employers, to declare that the eight-hours day simply means that the worker will get his present wages and earn them in the shorter time by increased intensity of application to his work. If this were the result expected by workmen there would have been no demonstration on Sunday, and if this were expected by employers they would have no objection to a change which would alter neither the cost of production nor their power over their hands.

The truth is that the workman believes that, under the existing wages system, the price of labour—like that of any other commodity sold on a market—depends very largely on the relation of supply to demand. He sees that when two masters are running after one man wages goes up, and that when two men are running after one job wages go down. He thinks, with Adam Smith, that the natural wages of labour are the full results of labour, and he argues that it is the competition of the unemployed, goaded by destitution to underbid their fellows who are in employment, that is the direct factor in producing low wages and bad conditions for the labourer. The workman has no intention, if hours be reduced from 12 to eight, of taking one-third less wages, or of working 50 per cent. harder. He looks to the employment of 50 per cent. more men to do the same amount of work, and further anticipates that the consequent depletion of the surplus in the labour market, by lessening the competition for employment, will enable the greater number then employed to obtain more, rather than less, for the eight-hours' work than the smaller number now employed do for the 12 hours' work. In a word, the workman's aim is not merely to get more leisure, but mainly to drive up the price of labour (the only commodity he has to sell) by a restriction of its supply.

Thus the eight-hours movement, if it means anything at all, means a higher cost of production, due to a higher wage bill.

It is, very naturally, the almost universal belief of the workman that the trade of this country will stand this increase in wages. I fear it is the common resource of some of their leaders to turn from the particular instance of any given trade in which profits are notoriously small to general denunciations of the obvious signs of wealth and luxury which surround us, or to prophecies of the day when Belgian, German, Italian, and Hindoo shall be prepared to stand out for similar improvements in their condition. But none dare plainly state that the British workman is to defer a change for the better until other countries will follow suit, just as none dare plainly state that any great improvement in the labour market here must necessarily attract such hordes of the poor of other lands as to neutralize any benefit that the British workman might hope to gain from an Eight Hours Act.

The fact remains that, supposing measures were taken to prevent the flooding of the labour market, and a great general rise in wages followed the shorter hours, many industrial establishments would be closed in a few weeks. Till the advocates of eight hours bravely face that contingency and are prepared with measures to avert it, they can make little real progress for their views amongst a practical people.

Industries in this country which are by their nature protected from foreign competition would not be harmed by such a rise in wages. As it would affect all competing firms equally, they could and would be compensated for the higher wage by demanding and receiving high prices.

Industries already severely pressed by foreign competition would be destroyed unless measures were taken to protect them from the poorly-paid labour of other races. This will scarcely be objected to by the British workman who is so keen for protection from the British blackleg. Industries that depend on their export trade would have to be abandoned in many cases or supported by bounties.

The higher cost of commodities would fall chiefly on those who buy the most, and would inflict the most loss on the non-producing consumers, while the working classes would be more than compensated for the smaller purchasing power of their shillings by the fact that they would have many more of them.

In the short space of six years since the eight-hours day was urged by myself, amongst others, as the first practical object of the Labour party, it has become an Aaron's rod, which has swallowed up all the rods thrown down by the political wise men and sorcerers. It is surely time that it was discussed in its political bearings.—Yours,

London, May 2nd

H. H. CHAMPION.

In a leading article in the same issue *The Times* says:—The organisers of the unday demonstration in Hyde Park met yesterday at the Westminster Palace Hotel in a very peremptory mood. They evidently imagine that their gigantic picnic settles every question, economical and political, connected with the eight hours movement, and that nothing remains but to issue their orders to Parliament for the instant embodiment of their views in legislation. Lord Salisbury, Mr. Balfour, and Mr. Gladstone have been summoned to receive a deputation from the Legal Eight Hours Day Committee. Lord Salisbury is abroad, and not unreasonably desires to postpone a definite answer until his return to this country. Mr. Balfour does not wish to anticipate his chief, and therefore courteously asks for delay. Mr. Gladstone replies that in his experience oral discussion of the kind desired is not of much use until the House of Commons is ready to deal with the question at issue, and that there is no likelihood of serious discussion in Parliament until the attention of the multitudes of people whom an Eight Hours Bill would affect has been thoroughly attracted to its consequences. On these grounds he begs to be excused from what must necessarily be a barren discussion. These answers have been received with great indignation by the high and mighty potentates of the eight hours movement. One fiery delegate moved that Mr. Gladstone's letter be put in the waste paper basket, but, though the motion found a seconder, the chairman had the grace to refuse to put it to the meeting. After other unmanly expressions of impatience and anger the meeting finally settled down to a more moderate view of the situation, but avenged itself for the "evasive tone" of the leaders by organising an immediate attack upon the rank and file at the House of Commons. A deputation demanded instant audience of a number of metropolitan members, some of whom were weak enough to yield. But they were no sooner shut up in a room with their captors than their fears took a new direction, and they begged to be let off on the ground that the thing had been sprung upon them without warning. They thus gained a respite, but are pledged to present themselves on some day to be agreed upon. In the meantime they will doubtless anxiously ponder the eight hours question in the light of the coming election.

We are not often able nowadays to hold up Mr. Gladstone's conduct as a model for imitation, but in this matter he certainly sets an example which many weak-kneed people on both sides of the House might advantageously follow. The attempt to extort pledges at this stage of the eight hours movement is simply an outrageous attempt to overhear the judgment of House of Commons by empty clamour, and as such ought to be steadily resisted by every man who respects himself. Mr. Gladstone appeals to a sound and fundamental principle, though one which he conspicuously abandoned in 1885, when he declares that the eight hours question has not yet been sufficiently considered by the various classes it effects to enable him, as a political leader, to advance its consideration by the conference to which he is invited. This is a proposal profoundly altering the whole conditions of industrial organisation in this country and interfering in the most high handed manner with personal liberty. Though it has for a year or two figured more or less prominently in the programme of the new unionism, it has never received any serious attention from the electorate at large, or even from the working classes as a whole. Very few persons have so much as learnt to regard the agitation as at all seriously intended, and of exhaustive discussion not so much as a beginning has yet been made. Thousands even of those who clamour for legislation are as ignorant as babies of

the nature of their demand; and a politician who grants that demand behaves as a man who should hand a child some bright-coloured poison that had taken its fancy. We are quite aware that much must not be expected of political human nature when an election looms in the near future. The Select Committee on Railway Servants' Hours of Labour is evidently at this moment in a position of some embarrassment owing to the supposed necessity for dealing gently with the owners of votes. It reported railway directors to the House for a breach of privilege, but there is less eagerness to vindicate its dignity when intimidation of witnesses comes from the side of a trade union. It may, however, be argued that the exact culpability of Mr. Harford is a small matter, and that to procure for him an admonition from the Speaker is not an object worth attaining at the risk of personal disadvantage. The eight hours question cannot be dismissed in that manner. No man can fail to perceive that such a wholesale interference with industry and personal freedom as the advocates of that measure so arrogantly demand, is a matter to be dealt with most cautiously and deliberately. It is certainly one of the very last things to be rushed at in the ignoble scramble for votes that precedes a general election, or to be virtually determined by hasty pledges given at the instance of an ignorant and impatient minority.

There is great sympathy at the present day with every movement for ameliorating the conditions of life. Shorter hours and more frequent holidays are universally felt to be good things when they can be legitimately procured, and the public, being under the impression that these are the things aimed at by the advocates of a legal eight-hours day, regards the movement with a kind of passive benevolence. It runs so much upon lines generally accepted as innocent, or even laudable, that few people have so much as realised the cast-iron uniformity which it is sought to establish, or tried to work out its immediate, to say nothing of its remote, consequences. But mere shortening of the hours of work is by no means the only or even the principal aim of the eight hours movement as at present conducted. The central aim is to restrict labour and curtail production. On this point we are glad to have the testimony of Mr. H. H. Champion, who in the letter we print to-day sets forth very clearly the economical fallacies upon which the whole thing is based. He begs us to dismiss from our minds the notion that the working man has any idea of making up for short hours by increased exertion, or of paying for increased leisure by reduction of wages. On the contrary, his view is that by working for fewer hours at his old pace he will compel employers to give work to those who at present stand idle. Not only are all the unemployed in this way to find employment, but the fact that there are no unemployed is expected to raise the rate of wages all round. This is pretty much as if a man were to pass a rope under his boots and think to lift himself in the air by hauling at the two ends with his hands. Mr. Champion apparently perceives that the movement would be fatal to our export trade, but that he seems to regard as a very trifling matter. Home industry, he thinks, would be better paid, and the higher prices of commodities would in some way fall upon anybody but the largest class of consumers. We can only indicate at present the extraordinary economic delusions embodied in these views, but the fact that they are seriously accepted and believed in, and made the basis of their policy by the leaders of the working classes, is surely enough to give pause to the most reckless seeker after votes.

THE WOOL CLIP.

The London wool sales this week practically mark the close of the season, and it may already be said that, in the market point of view, it ends better than it began. Up to March 29th, when the present series of sales commenced, reports from the wool-growing countries testified to a considerable increase in the production, and there were all the signs of a slackening demand. The circumstances of the previous year appeared to be reproducing themselves, in part, at least; for this time there was neither a financial crisis nor a protectionist agitation in America to add to the embarrassments of the position. Prices, however, were ruling low, and it was not unreasonably feared that the larger supply in sight would keep rates dull, if it did not depress them further; but suddenly, and without any particular obvious cause, a distinct improvement set in. It originated on the Continent, and was at once attributed in certain quarters to the operations of a foreign "ring" engineering a "corner." Within four or five days the aspect of the wool market was entirely changed; competition for the better sorts became actually spirited, and prices remained firmer up to Saturday's quotations. There was a "corner," it afterwards transpired, though not exactly of the kind we have been accustomed to in copper and cotton, into which a number of over-sold operators in Antwerp, Roubaix, and Leipzig were

for a while uncomfortably squeezed. Foreign speculators had been dealing too freely in time bargains, or, in other words, selling futures on mistaken calculations, and their purchases to cover gave the market the impulse it needed. Until the welcome filip came, London quotations had touched the lowest rates known since 1886. How far the spurt will be maintained, in view of the abundant clip, it is this year more than ever difficult to say; nor need we now do more than note that in Australia and on this side more hopeful views are expressed than at this date last year, or for some time before.

The first complete returns of the whole clip are always those of the Australian colonies, and of these an early and exhaustive summary is, as usual, supplied by Messrs. Goldsbrough, Mort and Co. In every respect, except values, the year 1891-2 appears to have been fortunate for colonial wool-growers. The output was the heaviest yet attained, and was, at the same time, of higher quality than the preceding crop. There were differences in the degree in which the districts were favoured; but the season is generally described as having been most propitious, rain plentiful, and grass abundant. Even the great strike of shearers in Queensland was not an evil without compensation, since the delay gave the sheep two months heavier fleeces, and, to some extent, also increased their number. Similarly, in 1890 the dispute with the shearers in New South Wales contributed to the abnormally large increase in the crop of that year, as the sheep had increased, carried more wool, and yielded a perceptible improvement in the clip per head. Altogether, the excess of production up to the present date, as compared with last year's, is set down at 155,266 bales and, taking all things into consideration, it seems a moderate estimate to say that the increased shipments for the year ending June 30th, will be between 150,000 bales and 170,000 bales. The total sales in the colonies for the twelve months were 634,043 bales, as compared with 568,170 bales and 524,979 bales in 1889-90 and 1890-1 respectively. Of this total the distribution is described as follows:—

	Bales.
Great Britain	301,000
Continent	325,000
United States	51,700
Japan, India, and China	17,900
Local manufacturers and speculators	55,000

American purchases in the colonial market were, for the first time, a main feature and a strengthening influence on prices. Twelve months before, colonial wool-growers were naturally complaining that the McKinley tariff had shut out of the United States £1,800,000 worth of woollen goods of British manufacture. It would be absurd to say that American buyers of the raw material have recompensed Australia for her former share in our lost trade; but it is evident that the colonial wool-growers are gaining in one way what they were deprived of in another. Messrs. Goldsbrough, Mort, and Co. remark on that point:—"Wherever American competition was attracted, and the class of wool purchased shewed considerable extension, the prices realised were exceedingly favourable. The value of this demand to our growers has been amply demonstrated, and whether future legislation in the United States maintains or abrogates the existing wool duties, the colonial markets, if pastoralists shew proper appreciation of the situation, must become the sources of supply." It is worthy of note in this connection, that of the American supply 40,166 bales were shipped direct, and only 10,403 bales shipped *via* London.

The relative export of each of the colonies for the four years up to 1891-92, and the places of its destination, are set out in the following tables:—

	EXPORTS.			
	1890-91.	1889-90.	1888-89.	1887-88.
	Bales.	Bales.	Bales.	Bales.
Victoria	419,959	425,147	346,220	347,880
New South Wales	566,465	472,914	457,340	397,071
South Australia	155,003	146,219	134,427	159,087
Queensland	121,669	105,425	106,118	91,743
Tasmania	25,564	23,812	21,281	16,657
West Australia	20,273	18,070	18,724	16,485
New Zealand	308,489	272,513	269,521	267,128
Total	1,618,052	1,463,000	1,349,437	1,267,128
	DISTRIBUTION.			
	1890-91.	1889-90.	1888-89.	1887-88.
	Bales.	Bales.	Bales.	Bales.
London	1,346,122	1,213,671	1,176,758	1,176,117
Continent direct	230,144	208,666	58,131	42,990
via London	10,593	39,222	46,277	45,341
America direct	21,574	4,320	39,727	18,547
via London	7,601	7,021	7,474	3,922
Japan	1,958	—	—	—
Total	1,618,052	1,463,000	1,349,437	1,267,128

The returns from the Argentine Republic, Uruguay, and the Cape are not available so early as those from the Australasian colonies. Argentina, indeed, is a "dark horse" in this matter as in others, and for the present its output can only be dealt with conjecturally. The production of the Republic for 1891 was 380,000 bales, an increase of 63,000 bales upon the previous year, which, in its turn, shewed a decrease of 104,000 bales on 1889, and an Argentine bale is equal to 1 $\frac{1}{4}$ Australian bale. Reports of the current

season are, on the whole, favourable, and it is estimated that the clip will exceed that of 1891, and amount to 420,000 bales. Uruguay, which is not included in the La Plata figures, exports a fine, long-stapled wool, but the crop is small. It was 57,734 bales in 1891, against 77,749 bales in 1890, and is expected this year to slightly exceed the former figure. The shipment from the Cape and Natal to the United Kingdom was 316,510 bales in 1891, against 283,494 bales the previous year, and probably the figures here again will show an increase, but not a large one.

It will thus be seen that the world's wool supply from all sources is considerably larger than in previous years, and, from all we have been able to ascertain, it is probable that year by year the production will go on increasing. There is no question among colonial sheep farmers of restricting the output, as there is, for example, among cotton planters in America. The increase obeys a natural law, which is only checked by other natural laws, and irrigation works and water storage have done much to relieve the pastoralist of the risk of drought and starving flocks. The sheep census of Australasia for ten years past is a tale of continuous growth. From 78,062,426 sheep in 1881 the total had become 115,744,042 sheep in 1891, which year showed an enormous increase of 15,500,000 sheep over its predecessor. The same forces are operating in Cape Colony and Natal, and in South Africa, even more than in Australasia, the wool-grower finds at hand a ready market for the carcase. There are no trustworthy data of the wool industry in the River Plate; but the clip returns for the last ten years, though the fluctuations were sometimes violent, show a general increase, and it is known that Argentina has recently been paying more attention to breeding and the improvement of the staple. These considerations would seem to point to a danger of production overtaking demand and yet that is not the fear of experienced brokers here or growers at the Antipodes. It is pointed out that there have been former seasons when the crop appeared to exceed the world's wants, and that consumption in the end invariably established an equilibrium, though at whose loss it would not be so easy to define. Messrs. Goldsbrough, Mort, and Co. point out that the large colonial deliveries into Europe for the year-ended December, 1891, were almost entirely absorbed; they add, however, the suggestive observation that, as it was understood that a proportion of the absorption was due to the necessity for keeping machinery employed, "it becomes a question whether the circumstances attending manufactured products are equally favourable."—*Financial News.*

[We have made several corrections in the above article before reproducing it, and do not necessarily endorse all the statements made.—Ed. T. M.]

THE firm of Adolf Schwab, of Hammerstein, in Austria, proposes to erect a new spinning factory in that place.

SCHMIEDER AND BERGHOF have just erected a power-loom weaving shed for cotton flannels and half-linen goods in Crefeld.

A SOUTH-GERMAN firm in the tricot department intends to enlarge its operations by the erection of a branch factory at Glarus, in Switzerland. It will furnish occupation to 100 to 150 workers.

PROPOSED EXPORT DUTY ON INDIAN JUTE.—The Calcutta journal *Capitalist* proposes that an export duty should be put on jute. "We have strenuously maintained," says our contemporary, "that the portion of the crop which leaves this country might be turned to account for the purposes of revenue."

Letters from our Readers.

ASHWORTH versus LAW.

(To the Editor of *The Textile Mercury*.)

SIR,—Your correspondent, Mr. Charles J. Hall, writes that a reply to our letter of the 20th ult. would be "esteemed a favour by the trade generally." Permit us to ask Mr. Hall: Does he write at the request, or on behalf of the "trade generally," or is he taking upon himself another rôle? Will Mr. Hall say, when, where, and by whom was he either instructed, requested, or authorised to write on this matter, by either the "card trade generally," or by anybody? Does not Mr. Hall understand that the reason why the plaintiffs, after inspecting our machines in operation, brought this action was, not because of any similarity between the Wilkinson and our machines, but because, as Messrs. Ashworth alleged, we were side-grinding not only to some, but to the same extent as Messrs. Ashworth's patent? Unless, indeed, Messrs. Ashworth were prepared to support such view, how could they have gone into Court at all? However, let us see what Mr. George Ashworth said on this point when in the witness-box, and in answer to his own Counsel:—

Question 143.—Mr. Aston, Q.C.: "Now, are you able to say whether the defendants do sharpen

card teeth substantially as set forth in your specification?"

Answer.—"I consider that that is what they do exactly."

We assume Mr. Ashworth knows what he patented, yet Mr. Hall, after taking upon himself to deal out "common justice," now turns round and contradicts the patentee, who makes his statement on oath.

The position is clear enough. The Court held that the Wilkinson grinding was same as defendants' grinding, and Mr. Ashworth stated that the defendants do sharpen the cards "exactly" as set forth in his specification where there is any difference as to the three grindings. The inconceivable thing is that your correspondent did not earlier take some active part in defence of the patent, and that he should only now appear in the field after delivery of judgment, from which there is no appeal.—Yours truly,

SAMUEL LAW AND SONS, LIMITED.
Cleckheaton, May 4th, 1892.

Textile Markets.

COTTON.

MANCHESTER, FRIDAY.

Our staple trade has continued up to the time of writing in the same disorganised state as last week. The communications which took place on Thursday between the Executive Councils of the Employers' and Operatives' Associations have, however, happily ended in an arrangement being effected. Great surprise has been manifested in commercial and industrial circles at the unanimity of action displayed by the employers, who have never been credited with the power of holding together for common purposes and to assure common objects that they have shewn in this instance. Outsiders, however, are not familiar with the petty tyranny which the trades-unionists have been inflicting upon them for three or four years past, and which has exhibited a continual tendency to become further and more strongly accentuated. The educational influence of this course of conduct upon the employers has been very considerable, and has given a great impetus to organisation. Nearly every district now has its local Association of Employers in working order, and most of these are already affiliated to the Federal Association, which has its headquarters in Manchester. Great efforts are also being made to bring in new adherents, both individuals and societies, and great success is attending them. There is also considerable likelihood of important changes being effected in the East Lancashire Association of Employers, which will result in their federation with that of the spinners. Should an arrangement not speedily be come to between these two powerful Associations, it will ensure the trade the tyrannical treatment to which it has so long been subject at the hands of unscrupulous and self-seeking leaders.

COTTON.—The cotton market opened on Saturday under very disappointing influences. New York had responded badly to the gain of Liverpool on the day previous. The consequence was that under the further depressing feeling that the dispute between spinners and their employees might continue much longer than was believed the day previous, prices began to run down very rapidly until futures closed with a loss of 4 points on the day. American was decidedly cheaper, whilst other sorts were quiet at unchanged rates. On Monday there was quite a revulsion of feeling, and the market recovered nearly all the decline of Saturday, and futures registered a gain of 1½ to 2½ points over Saturday's rates, though during the day they once attained 3 to 4 points of an advance. It should be clear to the spinning trade that Liverpool assists to a large extent in "making game" of them, as the only reason alleged for this severe fluctuation was that New York sent a message on Monday stating that its previous one, saying "Bradstreet's" estimate of the planting gave a reduction of acreage of not more than 10 per cent., was untrue, and that the estimated reduction by that authority was from 20 to 25 per cent. On Tuesday the market opened under depression, ostensibly because the cotton receipts at the port equalled those of last year, as if it was really of some moment whether they did or not at this period of the season, and with the present visible supply. This depressed futures fully three points, and spots quite 1-32d. Next came a stream of telegrams from Manchester—we wonder who sent them—that the lock-out was collapsing, and immediately a rapid advance took place, by which the morning's loss was recovered, futures closing with a gain of 1 point. Spots were offered freely, and prices hardly changed. Other growths were unchanged. On Wednesday there was again an increase of strength, on the vague impression that the dispute with the operatives might terminate at any moment. Egyptian and Brazilian were quiet, but, with a better demand for East Indian, Broach and Tinnivelly advanced ¼d. Futures, after some fluctuations, closed with an advance of 2 to 2½ points. Yesterday the market continued to show

signs of increasing strength in spots, and prices were appreciably dearer. Futures were in a very unsettled state, arising from the conflicting views entertained by operators as to the likelihood of a settlement being effected or otherwise in the conference in the afternoon between the contending parties. Some fluctuations occurred, but on the whole the contending influences were nearly in equipoise, as the market closed with a net advance of ½ to 1 point on the near months, and a loss of ½ on the distant ones.

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

	Import.	Forward.	Sales.	Stock.	Export.
American ..	34,044	33,334	27,750	1,491,410	3,697
Brazilian ..	1,300	744	750	51,780	—
Egyptian ..	2,293	4,365	3,090	113,240	825
West Indian	2,793	427	440	32,800	184
East Indian	5,364	2,069	2,530	39,730	338

Total .. 45,860 .. 40,879 34,560 1,728,960 .. 5,044

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

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

	Satur-day.	Mon-day.	Tues-day.	Wednes-day.	Thurs-day.	Friday
April-May	1-11 8	1-15 16	1-10 53	1-07 28	1-06 6	1-09 8
May-June	1-11 8	1-15 16	1-10 53	1-07 28	1-06 6	1-09 8
June-July	1-11 8	1-15 16	1-10 53	1-07 28	1-06 6	1-09 8
July-Aug.	1-11 8	1-15 16	1-10 53	1-07 28	1-06 6	1-09 8
August ..	—	—	—	—	—	—
Aug.-Sept.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
September	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
Sept.-Oct.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
Oct.-Nov.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
Nov.-Dec.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
Dec.-Jan.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8
Jan.-Feb.	1-61 40	1-69 40	1-60 61	1-41 2	1-41 4	1-42 8

Price of Mid-American.	3/4	3/4	3/4	3 15-16	3 15-16	4d.
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Estimated Sales including Spec. and Export.	3,000 500	3,000 200	4,000 1,000	6,000 800	8,000 1,000	10,000 1,000
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The following are the official quotations from the same source:—

	G.O.	L.M.	Md.	G.M.	M.F.
American	3 1/8	3 1/4	3 1/8	4 1/2	4 3/8
Fernam	3 1/8	3 1/4	3 1/8	4 1/2	4 3/8
Ceara	3 1/8	3 1/4	3 1/8	4 1/2	4 3/8
Paraiba	3 1/8	3 1/4	3 1/8	4 1/2	4 3/8
Maranham	3 1/8	3 1/4	3 1/8	4 1/2	4 3/8
Egyptian	4 1/4	4 1/2	4 1/4	4 3/8	4 3/8
Ditto white	4 1/4	4 1/2	4 1/4	4 3/8	4 3/8
M.G. Broach ..	—	—	3 3/8	3 3/8	3 3/8
Dhollerah	2 1/4	2 1/2	3	3 1/4	3 1/4
Omra	2 1/4	2 1/2	3	3 1/4	3 1/4
Bengal	2 1/4	2 1/2	3	3 1/4	3 1/4
Tinnivelly	3 1/4	3 1/2	3 1/4	—	—

YARNS.—On Saturday home-trade American yarns continued strong, with a hardening tendency. Weft yarns continued to gain upon the others, owing to increasing scarcity, and were held more firmly for advances. Still, so far as warp yarns go, there is no chance of any immediate running out of stock. In Egyptian yarns a slightly hardening tendency was visible, arising from the prospective short time working. On Monday American yarns continued their disposition to harden, but there was little buying. Egyptian yarns were firm, with a slight increase of transactions. Only a little business took place in yarns on Tuesday, and prices were again the turn harder. Very little, however, was done in any department. On Wednesday there was no material change in the yarn market, spinners holding firmly for full rates, and buyers operating most cautiously and in the most retail manner. Yarns continued very firm, but met with only the smallest enquiry yesterday. Users felt no disposition to enter into extended engagements at current rates, as the early termination of the dispute (which has now been arranged) will probably speedily turn prices at least somewhat in the direction in which they have been before. Export yarns are also slow.

CLOTH.—The week opened on Saturday without any material change in the leading cloth sections. Manufacturers, compelled to ask more for cloth, met with no satisfactory response on the part of buyers without naming, the enquiry from the large distributing centres of the East remaining very feeble. Cloth all round exhibited no improvement and very little change

in any direction. Notwithstanding the stimulation that might have been expected in the cloth market from the extensive present and prospective stoppages of machinery, the demand remained so light that the balance of unfulfilled orders in the hands of producers continues to grow less. Some of the minor sections of the market continued to do an average trade, but outside their own sphere they were without effect. On Wednesday there was a somewhat improved demand for the enquiries from abroad coming with higher limits. They were, however, much below present requirement, and consequently resulted in little business. In cloth yesterday no new features developed, and no increase of demand. About the usual amount of miscellaneous business was put through, at prices which shewed only the slightest improvement upon the lowest points.

Cotton is dearer to-day; American and Egyptian brown $\frac{1}{16}$ d. higher.

To-day our market has presented a somewhat strange aspect, numerous small parties of three, four, or more, grouping themselves together to discuss the terms of the agreement drawn up between the representatives of the Employers' and the Operatives' Associations, regarding which there is a considerable preponderance of dissatisfaction amongst the trade generally. This feeling also prevails quite as much amongst those who are most directly affected, like the Oldham spinners, as it does amongst spinners in other centres, who are only on short time. Business is again paralysed, and prices of yarns are down $\frac{1}{2}$ d. per lb. Cloth is in very small request, and where business is heard of it is only on the basis of almost the lowest rates.

SILK.

LONDON.—Messrs. Durant and Co., in their circular dated 4th May, say:—We are again only able to report a very quiet month in business, without change in prices. All attention is now turned to the approaching crops. The latest telegrams and letters from Italy and France express some fears for the result should the present unfavourable weather continue. Up to the present no actual damage has been done, but the fear of what may happen has given strength to the Milan and Lyons markets, and business continues to be done at improving rates. Telegrams from China and Japan report the weather as unfavourable, and the crops backward. So far this has had but little effect on our market. The public sales are fixed to take place on the 17th and 18th of this month.

Arrivals in April.

Bengal	358 Bales.
China	387 "
Japan	16 "
Canton	80 "
Tussah	" "

Messrs. H. Zweifel and Co., in their circular of the 4th inst., say: Since our last report there has been some business done chiefly in Tsatlee, at prices ruling last month, but owners seem rather firmer now, as advices from the Continent are decidedly better, owing to improved demand and the bad weather. As regards the European silk crops, the cold and changeable temperature prevailing during the greater part of last month has delayed the hatching of the seed in most places, and instead of an early crop, as anticipated at first, we are now likely to have a late one.

Telegram from Shanghai, dated 30th ult., quotes best chop 4 Tsatlee Tls. 375 = 12s. 3d. London terms, or fs. 34 Lyons terms; medium No. 5 Tls. 237½ = 9s. 6d., or fs. 26.25; exchange on London six months doc = 3s. 11½d. Total settlements of silk from commencement of season, 68,000 bales, of which 50,050 white, 9,550 yellow, 8,400 brown. Unsold stock of silk 5,750 bales, of which 3,600 white, 750 yellow, 1,400 brown. Total export of silk from Shanghai to Europe since commencement of season, 52,750 bales. Telegram from Yokohama, dated 2nd inst., says: "Market has an advancing tendency; unsold stock, 4,100 bales; total export since commencement of season, 16,900 bales to Europe, 28,400 bales to America."

WOOLLENS AND WORSTEDS.

BRADFORD.—There is a steady consumptive demand for the finer sorts of English wool at recent rates. Any attempt to enforce an advance puts an end to enquiry. Colonial wool is unchanged. A good demand is experienced for alpaca and mohair. Yarns for export business slow; shippers have few new orders to place. Many spinners keep fairly engaged on old contracts. The home trade is fairly active. There is a good demand for mohair and alpaca yarns at firmer rates. The piece trade does not shew much improvement. There is rather more business doing on American account, but the general export trade is quiet. The home demand is rather brisker than of late, and on the whole manufacturers are well engaged. Prices, however remain low.

HUDDERSFIELD.—The weather is unfavourable. The condition of trade, in this district, though very discouraging in some directions, is hopeful in others, and whilst many employers find it very difficult to obtain orders and keep their mills going, others are very well off for orders, which have lately come to hand very freely, and they will keep them employed for some months to come. In these cases the prices which have to be accepted are, except for the very finest qualities and novelties in fancy worsteds, somewhat competitive, and the margin of profit is exceedingly small. The shipping trade is moderately busy for the Continent. Yarn spinners are fairly well employed.

LEEDS.—Considerable improvement has taken place in the woollen and worsted home trade. The winter trade has not been a bad one, only that shipping orders have been scarce. There is now more doing in the way of export, especially to South America and Canada. The worsted coating trade has revived, and some makers of novelties are full of orders. Producers of dress and mantle cloths have begun to make overtime, and in Yealton and Guseley employment is plentiful. Thin meltons sell fairly well. As usual at this time of the year the turnover of beavers, pilots, heavy meltons, and prints is limited. Faced unions are freely enquired for, but makers have much complaint to make as to current prices. Considerable quantities of fancy and covert coatings, Derbys, hairlines, checks, and Irish tweeds are delivered every day to provincial consumers. The blanket trade has improved a little, and there is a better feeling in the rug trade. The wholesale clothing trade has been, and still is, very much discounted by labour disputes, and scarcely any business at all can be done in the North, where under ordinary circumstances large quantities of ready-made clothing are sold, especially at this season of the year.

ROCHDALE.—Manufacturers are working full time, and in a few cases overtime. Manufacturers are buying wool chiefly to cover orders, for they cannot bring their minds yet to pay willingly the advanced rates. Staplers, on the other hand, are very firm in their prices.

LONDON.—Messrs. Schwartz and Co., in their report, dated 3rd May, say:—The second series of London sales of colonial wool, which commenced on the 29th March, closed to-day, the following quantities having been catalogued:—

Sydney	109,593 bales against 68,338 bales
Queensland	60,115 " " 38,304 "
Port-Philip	72,160 " " 57,754 "
Adelaide	25,771 " " 29,092 "
Tasmania	8,234 " " 5,578 "
Swan River	3,710 " " 4,465 "
New Zealand	37,599 " " 48,706 "
Cape	37,171 " " 41,995 "
Total	354,354 bales against 284,292 bales

In the corresponding series of last year.

The net total available amounted to 355,000 bales. Of these 335,000 bales have been sold, 112,000 bales for home consumption, 212,000 bales to the Continent, and 11,000 bales to America leaving 20,000 bales to be carried forward to next sales. The sales opened with a decline of 5 per cent., which reduced Australian merino wool to about as low a level as has ever been known since Australian wool played a leading part in the supplies of the world. After about a week's depression a strong upward movement suddenly set in, which touched the wools relying on English or American demand comparatively lightly, but reached 20 per cent. in those greasy descriptions which are mostly taken for the Continent. Later on in the series some of the speculative demand fell off, and part of the ground gained was lost again, but compared with the low opening rates, or even with the closing rates of the preceding series, a fairly substantial gain remains. Owing to the succession of up and down movements, the suddenness and one-sided character of the advance (foreign wool being mainly concerned) and the uneven effect of the weakening later on, there is great diversity in the prices, and an accurate description of the market is difficult. But without following all winding fluctuations, we believe the following to be a fairly correct account of the present position at the close of the series, as compared with the low opening rates:—

The best Victorian greasy wools which mainly rely on American demand and never participated in the rise at all, unchanged.

Shafty grease wools, as bought by Yorkshire and America, viz., long sound Riverina and the best Adelaide, $\frac{1}{2}$ d. higher.

The great bulk of medium and good greasy wools, usually taken for the Continent, and which at the best time had risen 1½d., now 1d. higher.

Poor Adelaide grease $\frac{1}{2}$ d. higher.

The best scoured, which, except for very superior fellmongers' wools, and a few exceptionally fine clothing lots, never rose proportionately to grease, $\frac{1}{2}$ d. to 1d. higher.

The bulk of scoured 1d. to 1½d. higher.

Crossbreds fully $\frac{1}{2}$ d. higher, the advance being

gained during the later part of the series, when merinos became weaker.

Cape grease at the best point $\frac{1}{4}$ d. above the opening, now $\frac{1}{2}$ d. higher; snow-whites at the best 1½d., now 1d. higher.

As compared with last sales' closing rates, the market may roughly be described as on a par for the very best Australian grease and scoured, and as about 7 per cent. higher for the great bulk of Australian and Cape wools.

The history of this series is a reproduction on a smaller scale of the events in 1886. The low level of prices from which the upward movement started, though by no means identical at all points, may be called similar, and similar also is the unexpected suddenness of the rise, its Continental origin and the opposition it encountered at the hands of the English trade. But both in the duration of the depression and in the vigour an extent of the advance there is a wide difference. For while in 1886 the low level lasted for a whole series now it only lasted for a few days, and while then the English opposition was overborne and a general rise of 30 per cent. established within the bounds of one series, and with the force of the movement only half spent, on this occasion the rise reached at best 20 per cent., was less general, and, not being able to carry the English trade along, lost part of its importance in the latter half of the series. The following shews the supplies and deliveries of colonial wool as compared with last year:—

LONDON MARKET:—			
	1892.		1891.
	Bales.		Bales.
Held over from December	5,000		12,000
Net imports for the first two series ..	640,000		591,000
	645,000		603,000
	Bales.		Bales.
Home consumption	217,000		239,000
Export	408,000		355,000
Total sold	625,000		594,000
Held over	20,000		9,000
DIRECT PURCHASES:—			
Home consumption, forwarded direct ..	119,000		67,000
Foreign " forwarded via England	57,000		59,000
" " direct imports	255,000		188,000
	401,000		314,000
TOTAL CONSUMPTION:—			
Home Consumption	336,000		306,000
Continental	623,000		553,000
American	67,000		49,000
Total deliveries	1,026,000		908,000

The quantity sold in London in the first two series—625,000 bales against 594,000 bales last year—shews an increase of 31,000 bales, the direct purchases—401,000 bales against 314,000 bales—one of 87,000 bales, giving a surplus of 118,000 bales in the total deliveries to the trade. We believe that this with the 50,000 bales already received in excess in November, will about balance the expected increase in the colonial production and that the supplies in the two next series will in the aggregate be much the same as last year. The distribution of the wools between the home and foreign trade is similar to last year, viz., roughly one-third and two-thirds. The following dates have been fixed for the next two series:—

The 4th June for the third series, the gross arrivals being limited to 425,000 bales.

The 13th September for the 4th series, without limitation.

The opening of the last series has not yet fixed, but it has been decided to close the list of arrivals on the 22nd November. Bank rate 2 per cent.

GLASCOW.—Messrs. Ramsey and Co., wool brokers, in their report dated 3rd May, say:—Wool: There is no new feature in the wool market this week. Only a limited business has been doing without change in prices. A series of public auctions commences to-day in Leith, and will be continued here to-morrow. It is hoped the bright weather may have a cheering effect on the market. Sheepskins: The supply continues about the same, with a large proportion of good sorts. The advance of the season is now telling on the weight of the wool, which further aggravates the depression. Prices are, therefore, somewhat irregular.

In an appended circular Messrs. Ramsey add:—We accept the recurrence of the usual season for submitting our supplementary report on the course of business in the wool market during the Spring months. Since our annual report, issued 7th January, there has been little variation in the wool trade, or indeed in the general business of the country; any change that has taken place has all been in the one direction, and that has been, we regret to say, a gradual drooping amounting latterly almost to stagnation. During the first two months of the year a fair demand was experienced, and it looked as if we were to have a repetition of the Spring of 1891, but as the month of March wore on it became apparent that manufacturers were not getting rid of their stocks of goods so freely, and any activity that had existed gradually slipped away, leaving business in the raw material for the last two months very much of

a retail character. The American demand for black-faced has greatly fallen off for the time being, and orders from that quarter are only of small dimensions. We are hopeful, however, that a considerable quantity will yet be required for export this season, and that the bulk of the stock of black-faced still remaining will ultimately be taken up. It is no doubt pretty generally known that there has been a proposal before the House of Representatives in America to admit wool free into the United States, and that the Bill introduced for this purpose has been carried by a large majority in that House. It is feared, however, that its further progress may be delayed when it comes before the Senate for confirmation; but supposing it becomes law, and comes into operation on the 1st of January 1892, as is proposed, there is some difference of opinion as to what effect such a result would have upon Scotch wools. We are inclined to think that in the first instance, at all events, these wools would share with other kinds in the natural demand that would be encouraged in consequence of the removal of the tariff duties, but we must not forget that free wool in the United States means free wool to the production of all countries, and consequently a very much larger competition of foreign growths against our home production. Under the McKinley Tariff many of these are excluded owing to the classification clauses. With free wool all would be admitted. At the public auctions of Colonial wools now progressing in London, a total of some 356,000 hales are being offered, and so far these sales have passed off with considerable animation, and an advance of quite a penny per lb. all round has been established. The buying has been chiefly for the German market, and so far has had a very small influence on home wools, beyond creating a degree of greater confidence in the minds of holders, but which finds no response in the market, either in an increased demand or in the enhancement of values. The drooping tendency of prices has been checked for the moment, however, by this unexpected activity in London, and it is to be hoped that a better demand may also follow. Stocks are by no means excessive, and with even a fair trade doing, should be easily cleared before the new clip.

FLAX AND JUTE.

DUNDEE, WEDNESDAY.—The market still continues to droop. The advices from all the chief markets are adverse. Jute cloth is largely held in stock, and the reduced output has not yet begun to tell. Holders of jute become a little anxious, and do not to-day refuse bids they would not look at a week or two ago. The price is, indeed, not much lower, but to effect sales it is necessary to yield in every case a little. Flax is rather firmer, and for first-rate qualities of brown flaxes more money is again asked. Riga is still quoted at from £17 to £18 10s. a ton for K, according to shipper. Jute yarn is not cheaper to-day, but sales are difficult, as all the manufacturers are reducing hours or stopping looms. Hessians are without change in price, but the cost is now so utterly out of proportion to the prices which can be got that manufacturers prefer to stop machinery rather than increase their heavy loss. Flax warps of prime quality are firm; all other kinds of linen yarn are a shade easier to buy. Tows are unchanged, and for the best warps full prices are still obtainable. For wets the turn is in favour of the buyer. Linens are in fair demand, and if trade in England were not constantly prostrated by strikes, it is clear that there would be an excellent home demand. There is a little more doing, as is usual at this season, for export, and therefore the linen looms, both in Fife and Forfar, are fairly well engaged. *Carma* is still very quiet indeed, and prices are the turn easier. The Dundee fancy jute trade is very dull, and only special goods are being asked for. Twines, cords, and ropes are all enquired for, and the makers are very well employed.

BELFAST.—Yarns are moving more freely, and spinners are careful about booking next ahead. Prices are still for good sorts. Brown power-wools have better attention, and some fairly good parcels are changing hands, though prices leave much to be desired. There is no improvement in finished linens for home consumption, the turnover being disappointing, cheap cottons interfering with business, and the trade in them is gradually expanding.

DRY GOODS.

MANCHESTER.—The home trade is adversely affected by the labour and other disturbances in the North. Upon some travellers the effect of the disputes now in progress have been very severe, returns having fallen off greatly. This is all the more serious as many firms now pay their representatives commission only instead of salary. One house, for instance, allows its travellers 4% on the turnover, out of which the knights of the road must pay their expenses, ranging from 20s to 30s a day. Travellers whose turnover is £30,000 a year or over can make a moderate income on this basis; but

the members who fall below that figure have not in many cases much to shew as the result of the constant drudgery to which the modern dry goods traveller is subjected. The ribbon trade remains steady. Notwithstanding the expanding nature of our foreign print trade, as far as quantities are concerned, complaints are numerous as to profits. There are no marked novelties noticeable in the business, and if any were brought out a host of piratical imitations would instantly swamp the market. The carpet trade is quiet.

HOSIERY AND LACE.

LEICESTER.—The turnover in yarns shows a steady increase, with the exception of worsted knittings, etc., which have been unusually quiet so far this year. The fancy hosiery trade shows a marked improvement since Easter. The cashmere hose trade is also improving. The lambs' wool goods trade is fully up to the average, and more is doing in natural wool shirts and pants, etc. The boot and shoe trade is very slow and discouraging in nearly all departments.

Joint Stock and Financial News.

NEW COMPANY.

JOHN WHITLEY AND SONS, LIMITED, HALIFAX.
Capital, £100,000, in £5 shares. Object, to acquire the undertaking of a card manufacturer, now carried on at Brunswick Mills, Halifax, in accordance with an agreement expressed to be made between F. W. Thompson and A. W. Whitley of the one part and this company of the other part; generally to carry on business as card makers, card cloth and wire manufacturers, cotton spinners, etc. Subscribers:—

	Shares.
F. W. Thomson, 11, Park-road, Halifax	1
A. W. Whitley, Greenroyd, Halifax	1
S. R. Whitley, Greenroyd, Halifax	1
R. Boocock, 49, Centenary-place, Halifax	1
J. R. Rawnsley, 34, Centenary-place, Halifax	1
T. Harrison, 36, Centenary-place, Halifax	1
J. F. Thomson, 16, St. Mary-street, Halifax	1

The first directors are the first, second, and fourth subscribers to the memorandum of association. Qualification, £10,000. Remuneration to be determined. Qualification of subsequent directors, £500.

Patents.

SPECIFICATIONS PUBLISHED.

Each of the following Specifications may be purchased at the Sale Branch, 38, Curstler-street, London, for the price of 8d., or may be ordered on the Postal Keynet, price 8d., which is now on sale at all the principal Post Offices in the United Kingdom. 1891.

- 3,950 HUGHES AND ROWBOTHAM. Cleaning etc., damaged cotton, etc.
- 6,356 CAIRNS. Marking number of picks put in a fabric.
- 8,005 ELSEY AND SULLY. Lace curtains.
- 8,981 JAMES. Circular knitting machines.
- 9,270 DRANSFELD, E. and J. Hank dyeing machines.
- 9,373 LEITELLIER, V. and DUMOND. Looms.
- 9,469 PILKINGTON. Looms.
- 9,471 LEITCH. Jacquard mechanism.
- 9,549 THOMPSON. Drawing fibres.
- 9,673 WHARTON and PATTERSON. Cross weaving.
- 9,702 WHOWELL. Finishing cotton cloths.
- 9,739 ETCHHELLS. Carding engines.

NOTICE OF REMOVAL AND CHANGE OF FIRM.

E. K. DUTTON & CO.
(Late DUTTON & FULTON).

CHARTERED PATENT AGENTS.

Removed from 1, ST. JAMES'S SQUARE, to QUEEN'S CHAMBERS, 5, John Dalton St., MANCHESTER.

ABSTRACTS OF SPECIFICATIONS.

12,119. November 11, 1890. Treating fabrics, yarns and fibres. C. BROADBENT, Rue Bleu, Paris.

Fabrics, yarns and fibres are given a silky appearance by treatment with a concentrated solution of waste silk in an alkali, or in a solution of oxide of copper or nickel in ammonia, and then with acid, the material having been previously treated with sulphuric acid, phosphoric acid, caustic soda or potash, and washed. Slight modifications in the above process are described and arrangements of apparatus for carrying the process into effect are indicated, as well as methods of obtaining the various solutions

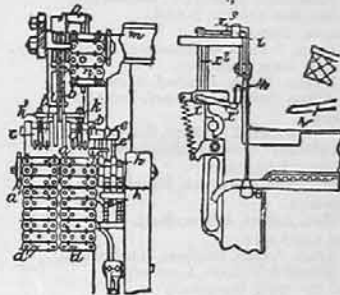
required. For the preliminary treatment the apparatus is preferably provided with a cold water jacket and with apparatus for washing and stretching the fabric as it enters and leaves the liquid, and with pressure rollers immersed within the liquid for removing from the material any trace of air. The washing vat may be divided by partitions of varying height into several compartments, the water being admitted into the deepest compartment at one end of the vat and flowing through the compartments in succession while the material travels in the opposite direction. Attached to the washing machine is a stretching and drying machine. To obtain pure copper or nickel oxide for this process, a cold and dilute solution of a copper or nickel salt is treated with a small quantity of an ammonia salt and is then added gradually to a cold solution of an equivalent of caustic soda or potash. The whole is filtered quickly and washed and dried in a centrifugal apparatus. The oxide is now stirred with ammonia in a vessel lined with lead and provided with stirrers and a cold water jacket. The silk solution is prepared in the last described apparatus, by adding the waste silk in small quantities at a time to oxide solution until it no longer swells out, and then filtering. When impregnating the prepared material with the silk solution it is passed first through a closed vat containing the prepared liquor, then through a drying apparatus, and then through acidulated water in a second vat, when the oxide is dissolved and the silk remains fixed on the material which is now washed, dried, and finished by beetling, calendering, etc. The above described arrangements are more especially applicable for the treatment of fabrics.

12,127. November 11, 1890. Spinning. J. A. HOULDSWORTH and C. H. WOODS, both of New Stone Mill, Bolton.

Carding Engines.—In order to render the whole of the cylinder and doffer available for carding purposes, the card clothing is supported at the edges of the cylinder by means of bent metal plates D, one edge of which takes into a groove in the rim of the cylinder. The solution is first forced into the grooves, and afterwards bent and ground to the required form or be formed of segmental angle pieces secured together by screws, etc. When applied to existing carding-engines, the grooves may be turned in the cylinder without removing the latter from the framing.



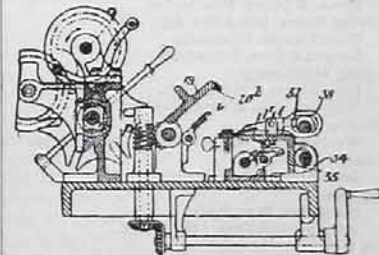
12,267. November 13, 1890. Looms. T. STUART, J. HARTLEY and J. WHITHEAD, Vale-street Mill, Nelson, Lancashire.



Change-bar motion.—In order to reduce the number of pattern cards, two card cylinders a, a' are employed, the ratchet wheels b, b', of which are operated respectively and alternately by catches c, c', the latter being put in and out of action by projections on a rod connected with a bell crank lever, rod, and feeler s. This feeler is controlled by a pattern chain m on a cylinder n turned by catches on levers k, k' operated by the cards d, d'. The levers h, h', h', h' operate levers from which the boxes are worked.

Stop motion.—In loose reed looms, the stop-rod finger z (Fig. 6) strikes on the displacement of the reed a spring bracket w, thereby releasing the arm x of a spring lever a' which then, through arm y and rod z', operates the fork lever z, as does the web lever, the brake being thereupon applied at the time of shipping the belt, and of stopping the pattern cylinder. A modification is described.

12,264. November 13, 1890. Spinning. J. E. PLATT and J. WARDLE, both of Hartford Works, Oldham.



Carding-engine flats.—A machine for applying and securing fasteners such as those described in the Specifications 6656, A.D. 1888, to the carding-engine flats. The fastener consists of a wire bent so as to form a series of staples, the legs of which are passed through holes punched in the card clothing and in the flat and clinched on the other side. The flat is clamped to the bedplate of the machine and the clothing is stretched longitudinally upon it by means of end clamps which are held in their adjusted position by ratchet gearing. The card clothing is adjusted so that the clothing shall be parallel to the edge of the flat by means of a grooved bar f which is mounted so that it may be raised into the required position with one edge g taking against the edge of the flat and the other h against the "bed" of the wire, the foundation of the card clothing taking into the groove between. The clothing is secured in this position by means of a spring clamp i operated by a handle and held by ratchet gearing while apertures are punched in the card clothing opposite to those in the flat. The fastener is then applied, a few of the staples being first inserted into the corresponding apertures and the whole forced flush or level with the foundation by a wedge-