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THE JOURNAL OF THE Textile Trades of Canada.

Vol. XX. TORONTO AND MONTREAL, JUNE, 1903. No. 6.

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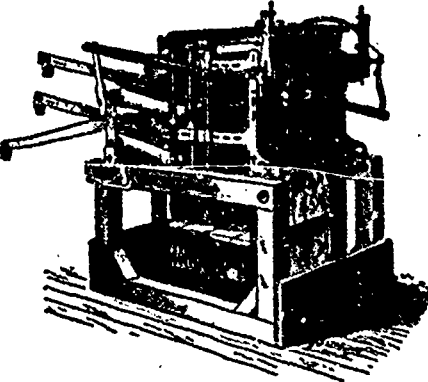
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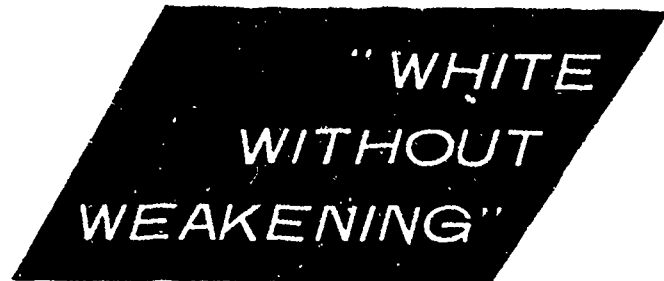
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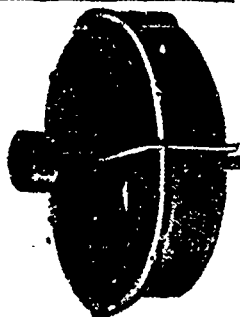
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# CANADIAN JOURNAL OF Fabrics

THE JOURNAL OF THE  
Textile Trades of Canada.

Vol. XX.

TORONTO AND MONTREAL, JUNE, 1903.

No. 6

## Canadian Journal of Fabrics

A Monthly Journal devoted to Textile manufactures and the Dry Goods and kindred trades.

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### THE CANADIAN TEXTILE DIRECTORY

A Handbook of all the Cotton, Woolen and other Textile manufactures of Canada, with lists of manufacturers' agents and the wholesale and retail dry goods and kindred trades of the Dominion, to which is appended a vast amount of valuable statistics relating to these trades. Fourth edition. Price, \$3.00.

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### FLAX STRAW FOR BINDER TWINE.

Canadian farmers pay about one and a half million dollars a year for the cord which binds their wheat sheaves. This is made almost entirely from manila and sisal, which has to be imported from the Philippines and Mexico. If the raw material can be produced in the country, a great source of wealth would be created. Flax straw can be used for making binder twine and flax can be grown without difficulty, especially in the Northwest. Last year there

was under this crop, west of Winnipeg, over 40,000 acres. The flax is cultivated for the seed only, the straw being burned. This is a great waste. The Journal has several times called attention to the possibilities, and we are glad to know that the problem is being worked out by the scientists of the Model Farm at Brandon, and Mr. Wolverton, manager of the binder twine factory in that town. Last year this factory supplied 250,000 pounds of twine for the western harvest, and is, we are informed, this year turning out 6,000 pounds a day.

As already stated, flax is grown in the Northwest for seed only, but a suitable fibre for twine can be produced by close seeding, by which means a long stem on the flax plant can be obtained. At the experimental farm, by doubling the quantity of seed, a satisfactory straight stem, free from branches, has been secured, though the yield of seed has not been proportionately increased. The next step is the improvement of machinery for treating the flax straw. Just as the old flail had to disappear before the modern thresher to make wheat-raising profitable in the west, so the bowler, still in use in Ontario in flax thrashing, must be improved upon to produce flax fibre for binder twine in commercial quantities. The machinery for extracting the fibre from the straw has already been built on a small scale for experimental purposes, and twine of the best class, possessing the requisite qualities of strength, evenness and length, has been made. The practicability of machinery for producing twine in marketable quantities has, however, yet to be proven.

The experiments will be continued, and next year flax seed from Russia will be tried, that country having a reputation for producing the best flax in Europe.

If the western farmers can grow the raw material for binder twine, it will add half a million dollars to the value of their flax crop, with very little added expense for cultivation. We may also see the farmer and the manufacturer united in working for the maintenance of a duty on imported twine.

### STUDY WHAT THE PEOPLE WANT.

Someone well points out that the one thing which keeps the British textile mills busy is the knowledge the English manufacturers possess of trade conditions in the various countries to which they export goods. If there is a falling off in the demand for cotton goods, say for China, or India,

the British manufacturer does not for a moment think of closing his mill, but immediately turns his attention to goods that will sell in South America or Africa. He knows the classes of goods demanded by the trade in different countries, their widths, weights, colors, etc., and makes what the trade demands in each instance. He considers it as much a part of his business to possess this information as to know the cost of his raw material, his labor, power, etc. Through consular reports, special trade commissioners, and in other ways, the British manufacturer keeps informed as to the demands of the trade in every quarter of the globe. The United States manufacturers of cotton goods have been so busy supplying the home demand, that they have not had time to exert themselves as their English cousins have done to learn what the people of different countries want. While the home market is worth retaining, the foreign market is worth cultivating.

### WOOL PRODUCTION IN AUSTRALASIA.

J. P. Bray, United States Consul at Melbourne, reports that, owing to the drought prevailing in Australia, there is a large decrease in this season's supply of wool, estimated at over 200,000 bales. At recent sales prices of both merino and crossbred wools advanced from 20 to 30 per cent. The total Australasian wool clip of the past two seasons was:—

	1900-1901.	1901-1902.
	Bales.	Bales.
Victoria .....	220,000	227,000
New South Wales .....	708,000	763,000
Queensland .....	157,000	143,000
South Australia .....	110,000	103,000
Tasmania .....	26,000	26,000
Western Australia .....	29,000	32,000
Total .....	1,250,000	1,294,000
New Zealand .....	396,000	406,000

Total for Australasia ..... 1,646,000 1,700,000

The estimated clip for 1902-3 is placed at 1,500,000 bales, a decrease of 200,000 bales.

### NEW SOURCE OF RUBBER SUPPLY.

The consumption of india rubber has increased so enormously of late that it has become a serious question how the demand could be met, and various substitutes have been tried, to say nothing of eking out the supply by adulteration. It is now announced that the world's rubber industry is likely to be completely revolutionized by the introduction of a fibrous rubber obtained from the bark of the roots of a plant discovered by a French botanist on the sandy plains of the French Congo. Specimens of the plant, which has been scientifically named *landolphia thollonii*, had been previously collected in seven different places, including Lower Guinea and the Lower Congo, but the plant was never commercially utilized until very recently, when a French

firm realized its possibilities, and has since produced excellent rubber, which sells for three shillings a pound. An English firm, headed by John Holt, has been approached with the view of introducing the manufacture into Great Britain, and Mr. Holt is employing agents to seek the plant in Northern Nigeria, where he hopes to find an important supply. Botanical and other experts predict a material increase of imports for the new source, which will greatly influence the market. It is to be hoped the statements will prove to be well founded.

—The action of the Canadian Postmaster General in reducing the rate on Canadian papers going to Great Britain, to the domestic rate, enables us to reduce the subscription price of this journal to four shillings a year. To quote the words of an esteemed contemporary, "Now is the time to subscribe."

—An epidemic of strikes seem to have broken out all over America. If the newspapers were to attempt to print all the strike news there would be room for little else. Many of these strikes are sympathetic and arise from no grievance in the trade specially concerned. The effect will be to curtail production and precipitate hard times.

—On the first of June the doors of seven cotton mills in Lowell, Mass., closed for nine weeks on account of the strike, were opened. At another, which was partially closed, 4,000 operatives out of 18,000 went to work. Not over two per cent. of the operatives on strike went back to work, but the mill agents seem to consider this satisfactory.

—One of the most interesting things shown at the exhibition at Osaka, Japan, are a number of cases exhibited by New South Wales showing its various qualities of wool. There are some 70 to 80 compartments in these cases, each containing a different sample marked with the name of the district from which it has come. The samples have cards attached which describe the geography of the districts in which the wools are grown, the amount of rain that falls and the production of wool. While the Japanese wear chiefly cotton goods, the exhibit will have its effect in creating a demand for woollens.

—We are glad to read the following confession from the Montreal Witness that there is at least one real grievance in the condition of the textile trades of Canada: "Only a few days ago the mine owners met in British Columbia and not a few of them claimed that not only should the two per cent. tax on the gross output of the mines be taken off altogether, but that they should be bonused as well. It is true that the majority had better sense than to make such a representation to the British Columbian Government; still, they want to have things so fixed that no Canadian can buy his lead except from them at their prices. Lots of things at the present time have no more and even less protection than pig lead; seeds for

instance are only protected ten per cent. ad valorem; books, except fiction and periodicals, only ten per cent.; soft coal only about ten per cent, at present prices, while binder twine, corn, mining, smelting and reducing machinery are free. So is coal cutting machinery, while the cotton and woolen manufacturers have to pay a duty on their machinery which is, no doubt, a real grievance."

—The threat of retaliation on the part of Germany against Canada, for imposing a surtax, is not heard so much of as at first. It is beginning to be realized that the action of Canada cannot be challenged by the extreme German protectionists, whose commercial policy is the abandonment of the most-favored-nation principle in dealing with countries which do not grant equivalent advantages to Germany. If the German Government continue to treat Canada in the spirit of the extreme protectionists, the result will be an entire cessation of trade between Germany and the Dominion, to the serious injury of the former.

#### OBITUARY.

The passing away of a man like the late G. B. Fraser, dry goods commission merchant, of Toronto, is a distinct loss to the trade as well as to his own personal friends. Mr. Fraser was a good type of that sturdy Scotch character which may be termed the backbone of the dry goods and textile manufacturing trades in Canada—straightforward, industrious, persevering, steadfast in friendship as well as business. He was born at Tain, Scotland, in 1830, and came to Canada about 1853, connecting himself with a wholesale firm in Montreal. He was a member of the Montreal Rifle Rangers for several years from 1855, which corps was composed very largely of the best business men in Montreal. He afterwards moved to Guelph, Ont., where he went into the retail dry goods trade, which he carried on successfully for 23 years. The following reference to his honorable business career was made by one of the Guelph papers on his leaving for Toronto: "It is well-known to the public that Mr. G. B. Fraser has for some time past been selling out preparatory to giving up business and a few days ago he disposed of the balance of his stock to J. D. Williamson & Co. In so doing Mr. Fraser closes his career as a merchant in Guelph. For the past twenty-three years he has been prominently known as a leading merchant in Guelph, and during that time has generally taken an interest in everything tending to the prosperity of the town. As a school trustee he took an active interest for years in all matters pertaining to education. But it was in connection with the Mechanics' Institute that his efforts were chiefly directed and which have been so beneficial to that institution. For over sixteen years, Mr. Fraser has taken a deep interest in the Institute, and many a time when it was at the lowest ebb, his energy and perseverance and hard work have given to it new life, and in fact, kept it in existence. In Mr. Fraser's removal from Guelph to Toronto, we lose an old and valued citizen, whose honesty, integrity and perseverance have been acknowledged by all, and who regret his removal after twenty-three years' residence in Guelph." After travelling for a time for the wholesale firm of Alexander & Anderson, Toronto, he started a business for himself in 1884, as a commission merchant in dry goods, and represented various Canadian tweed and knitting mills, as

well as foreign dry goods exporting houses, selling to the wholesale trade. Mr. Fraser leaves a family of several children, one of the sons being Geo. W. Fraser, artist on the staff of the Toronto World.

#### NEW BLEACHING PROCESS.

With regard to the bleaching process mentioned in our April issue, about which a number of enquiries have been received, we have received the following further information from the agents for the process referred to. We herewith send you as promised, a few brief particulars of the advantages and saving to be gained by adopting a new secret process for bleaching cotton and especially linen fabrics: The great saving in time and superior color, etc., results in linen, are almost incredible, but as you have no linen weaving industry in Canada, we only send you notes re cotton bleaching. By this new process the usual two cleansing or Kier boilings, each boiling costing about 15s. per ton of cloth, are dispensed with, and are replaced by a single process at much lower temperature—bath or soaking costing about 12s. per ton of cloth, against the old style 35s. per ton. This lower temperature and treatment only reduces the weight of say a 36lb. of cotton drill, to 35¼ lbs., instead of the usual loss of from 10 to 15 per cent. in the ordinary trade boiling process. The new process effectively bleaching all the size and filling, etc., and leaving it in the cloth, instead of washing it out to be replaced when finishing, as is generally needful in the ordinary way. The new process will bleach as much cloth in 1½ to 2 days as any even modern ordinary plant will do in 2 to 3 days, as well as saving in the boiling as shown above. When bleaching cotton damasks, a much superior cloth and finish can be obtained by this new process, by using an ordinary Scotch calendar machine for one-half hour's time, in place of the usual practice of 10 hours' beetling, to say nothing about the more durable condition of the cloth by substituting this harmless and much cheaper process of finish.

No alterations or additions to any reasonable, even old style bleaching plant are needed to carry out this time and money-saving method.

Any intending purchaser or his expert can inspect a permanent working plant by appointment with the undersigned agents.

Any interested parties can bring their own cotton or linen pieces, and see them treated under their own observation, by prior appointment.

The following brief description of the respective treatment of cotton cloth lumps or pieces of regular or standard quality, by the old as compared with the new process, will give a fair idea of the benefits gained through the adoption of the latter in cotton bleaching. The benefits, saving, and superior results in bleaching linen cloth fabrics, are very much greater than in cotton bleaching. The ordinary style of bleaching is usually as follows:—

No. 1	.....	A Lime Boil
" 2	.....	Acid
" 3	.....	Soda Lye Boil
" 4	.....	Chlore, Dip
" 5	.....	Acid.

With washing between each operation. Ten operations in all.

The new process replaces Nos. 1 and 3 by a special bath which takes no weight out of the cloth. The chemicals required are easily obtainable, and moderate in cost.

F. W. Wilson & Co., 23 John Dalton St., Manchester, Eng.

## Foreign Textile Centres

**Belfast.**—Trade is dull to such an extent that the Irish Flax Spinners' Association, which recently purchased a spinning and weaving concern for £21,000, and in which 11,000 spindles are employed, has decided to discontinue the spinning from 15th June, in order to limit the production of Irish spun linen yarn. This step has caused consternation among the operatives, over 350 of whom will be thrown out of employment.

**Dundee.**—The flax spinners and manufacturers of Forfar, Arbroath, Brechin, and other places in this district, are so feeling the pinch of bad trade that they are in several cases adopting short time.

**Kidderminster.**—The carpet trade is a turn better, and the mills are fairly well employed. The spinning trade is moderately well employed. Many spinners have largely reduced their stocks and can now, to a small extent at least, work for stock. Spinners are forced to hold to their advanced quotations, and by degrees the market is levelling itself up to them.

**Leeds.**—There is no material change in the situation here. Trade suffers from the effect of the rise in wool. When early in the season it was apparent that the price of raw material would further advance, merchants ordered freely to avoid paying higher prices later, but a cold, wet spring has prevented a clearance of stocks. Serges, mixture worsteds, and other plain goods are slow of sale, and the better trade is mostly in novelties and fancy styles. Cheap cotton warp fabrics for autumn delivery are in request for export, but otherwise the shipping branch is quiet. Canada is the best oversea market, and South Africa with ready-mades comes next, but the demand for Australia is meagre.

**Manchester.**—The high price of raw cotton is likely to force short time, and the hope is expressed that the margin in spinning will then improve and spinners will see their own. There is however, the fear that some will drop out, and the trade demand for cotton, coupled with the manipulations of speculators, may force prices higher yet. The manufacturers are being asked to make a collective exhibit at the St. Louis International.

**Oldham.**—Cotton mills are working full time and employment is good, though trade is reported as unsatisfactory. Employment is better than a year ago, when short time was being worked at most of the Oldham mills. Trade is reported good with Milnrow woolen workers. There is a strong disposition in the Oldham cotton trade to fall in with the movement for the curtailment of production by stopping mills a full week at Whitsuntide, and afterwards working four days a week. Already several spinning firms have reduced their working hours. The velvet manufacturing firms have decided to reduce production on the lines suggested.

**Rochdale.**—There is very little new business in the flannel market, due to the unfavorable weather, and the high price of wool. Manufacturers in booking orders early in the year expected some relief in the price of wool, and should quotations remain at the present level there will be some curtailment in production.

The cotton weaving industry is suffering severely, and short time is talked elsewhere. It is estimated that at the present time no fewer than 3,000 looms are idle, and in many mills weavers are working two, three, and four days a week. The spinning section has not yet been so seriously affected, but under present conditions the outlook is very gloomy. Not for ten years has the trade been in such an unsatisfactory condition at this period of the year.

## STRIKES AMONG THE TAILORS.

A strike of some 400 coat-makers and pressers took place at Hamilton, on account of the failure of the employers to meet demands made by the union. The difficulty was settled and the strikers went back to work, under an agreement as to prices and hours, to continue six months, as follows: Fifty-two hours of labor to constitute one week's work. Ten per cent. increase in wages of pressers, improvers and seam pressers. Saturday to be pay day. Over-time to be paid time and a half. Over-time to include legal holidays and time over 52 hours of any week. The union not to be discriminated against.

A threatened strike in Toronto was averted by an agreement providing for a reduction in the working day to nine hours, increase in wages for pressers to 25c. an hour, time and a half for over-time, double time for holidays, and the adoption of an arbitration clause which will make strikes in the future impossible; at least for the year for which the agreement was made. The men had demanded 27½c. an hour.

At Galt a strike was threatened but a compromise was agreed on, each yielding one-half.

The journeymen tailors of Winnipeg have submitted a new bill of wages to their bosses which provides for an increase of about 25 per cent., and talk strike if it is not acceded to.

But the greatest strike of all is in Philadelphia, where a general strike of textile workers involving 90,000 operatives was inaugurated. Of the six hundred firms engaged in the textile industry, forty-seven granted the demands of the union, and their plants, employing about 15,000 hands, continued in operation. All of the sixty-three ingrain carpet mills are idle, affecting directly 13,000 hands. All of the dyers are on strike, with the exception of those of one mill. Thirty-nine branches of the textile trade are affected by the strike, and the capital invested in the mills affected is estimated at \$100,000,000. The daily loss in wages will amount to \$125,000. The manufacturers admit that the operatives are in a position to close all mills not granting their demands. This is due principally to the importance of the dyers' branch of the industry. Their work is of a character not generally understood or readily learned, and while the dyers continue on strike the mills must remain idle no matter what the other textile workers may do. The large manufacturers are a unit, almost, in opposing the demands, to the extent of keeping their mills shut for a year, if necessary.

## LITERARY NOTES.

The Canadian Magazine for June keeps up its reputation. Among the contributors are Frank Cassel, Virna Sheard, Norman Patterson, J. Macdonald Oxley, Jas. Hannay, A. R. Carman, John A. Ewen, M. MacLean Hell'well, John A. Cooper and others not so well known. The number for July, the 125th issue of this magazine, will be a special number and will contain a number of features of interest.

The June number of the Century, among other articles, has one on the Salmon Fisheries of the Northwest, the London Stock Exchange, Modern Musical Celebrities, etc., and a number of stories of great interest. The Century is always a welcome visitor.

The Delineator for July, published by the Butterick Co., New York, in addition to fashion notes, has numerous articles relating to various departments of the household, which will be found of much interest. This is one of the best ladies' magazines published.

## BRITISH VS. UNITED STATES COTTON MANUFACTURING METHODS.

The following are extracts from the report of Thos. Ashton, the cotton commissioner, on Alfred Mosely's commission, which recently went to the United States to report on manufacturing methods in the two countries.

The system of working in the spinning and carding departments of the American mills is much different from what obtains in the English mills, and my opinion is that the advantage is on the side of the English system, both in respect to the cost and the quality of production—all other things being equal. The spinning mules are generally worked with one spinner to one pair of mules, and one back-boy to two and up to five mules, according to their length and the counts they spin. The back-boys attend to the creeling and sweeping and assist in cleaning the mules; their wages are paid by the spinners. There are doffers employed in the spinning-rooms, as well as starters-up in some of the mills to assist the spinners to get the mules in working order after the mules have been doffed. There are two doffers and one starter-up employed for seven to ten pairs of mules, in accordance with the length of the mules working and the counts they produce. There are also tubers employed, and they tube by hand; and two of these tubers follow the doffers in their work. All the yarn is spun on tubes, and the employers pay the wages of all the help, with the exception of the back-boys. In all cases the rovings are taken to the spinning mules, and they are put on the creels by a man who is employed for that purpose. The elevator man takes the rovings up to each room from the cardroom, and the same two men take away the empty bobbins from the spinning-rooms to the cardroom. The weft is taken from the spinning-room by the doffers to a place where it is weighed, and the elevator man then takes it down the hoist. The overseer in the spinning department attends to the wrapping of the cops and the weighing of the yarn, and has full management in the spinning-rooms, with power to discharge any person employed therein. There are also assistant overseers, termed second and third hands, who have to piece straps and bands and keep the mules in working condition, as well as make out all changes for the various counts of yarn produced.

Mule spinners are paid principally by piecework rates, set forth in the Fall River standard list of prices for mule spinning, but for finer counts than 50's wett or 37's twist prices are fixed by special agreement, which generally means the paying of standard wages. The New Bedford list provides for counts up to 120's.

The same piecework rates are paid for spinning whether the mules be new ones or old ones, and whether the mules run quick speeds or slow speeds; in fact, the spinning overseers can put what twist they think necessary in the yarn without altering the price paid for spinning. An attempt was made a few years ago to induce the corporations to pay by the turns per inch, but they refused to adopt such a course of payment. The spinners are paid by the weight of yarn spun, and they have the privilege of seeing their yarn sized, or weighed, at any time they require, and I was informed there was now very little trouble about the wrapping of their cops, as there was a strong feeling amongst the overseers to do right to both sides. . . . During the months of July and August, when the wind blows mostly from the south, the spinning is much affected for the worse, and the operatives describe these as the "dog days," as the winds take the twist out of the yarn, and they suffer more or less from the effects of the sticky nature of the atmosphere, which causes

the leather rollers to get damp, and extra turns are put in the yarn, so that spinners earn less wages and have to work harder during these troublesome times. The superintendents say that they use a better quality of cotton when the dry winds make their appearance, but the workpeople won't admit this to be true, and as a rule, the machinery is reduced in speed, and by this means they manage to tide over the difficulty which the dry winds create. Both the mill hands and their trade-union officials declare that the climatic influences, together with the strain of working to which they are subjected in the mills, are more injurious to health than is the case with the Lancashire operatives. . . . I was informed that the mortality amongst the cotton mill workers in the States was greater than it is amongst cotton mill workers in Lancashire, and my observations in the mills I visited led me to think there is plenty of truth in this statement. The operatives are pale and sallow-looking, and the pressure to which they have to submit in the heated rooms is certainly more trying to human endurance and health than most people have any real conception of.

Mr. Ashton says of the American system of spinning and carding that, taking the cost of wages with other results, there is no advantage in it over the Lancashire system. This opinion is confirmed by representatives of Lancashire card-room operatives' associations to whom he submitted the details. There is, however, "one pressing feature about the system of working the American cotton mills, and that is, the superintendents believe in using a good class of cotton, and by this means they are enabled to run their machinery at quick speeds and get out very excellent results. They also act on the principle of having their material well carded and cleaned, and they provide the requisite machines for securing such a result, and by adopting this policy they produce good yarns and avoid making a deal of waste. One of the leading mill superintendents in New Bedford informed me that they made a practice of using three grades better cotton than was used in Lancashire for the spinning of the same counts of yarn, and this statement was confirmed by an experienced cotton buyer and seller with whom I had a long conversation about the American cotton industry generally. In going through the mills I was privileged to visit, I had no difficulty in satisfying myself that the most was being made out of every machine used, and that, with the class of cotton in use, the mill operatives were not being hurried in their work any more if as much as they are in the Lancashire mills, where a lower class of material is generally used. I frequently saw mill-workers sitting down and watching their machines at full work, everything going on all right.

The following figures show the relatively high wages earned by mule spinners in Massachusetts: For 37 pairs of mules at this mill there are a spinning overseer and four second hands, and their total wages amount to £17 19s. 3d. per week, thus showing that the spinners have plenty of assistance ready to be called in in case of breakdowns or other work required to be done by the kind of help referred to. Spinners earn £3 15s. per week, as against £1 12s. in Oldham on mules of a similar length. The total wages which would be paid for an overlooker and assistant in Oldham on a similar number of pairs of mules would be less than £6 per week. At another mill I found the spinning mules contained 1,120 spindles per mule, being equal to 93¼ dozens long, and spinning 95's pin cops with a 60 in. draw and 3 in. of roller motion, and the mules were running three draws in 55 seconds and producing 600 lb., or 25.4 hanks, per spindle per week. The wages paid on the one pair of mules were £6 19s. 6d. per week, as against £3 7s. in Oldham under the same conditions.



On a similar length of mules, and spinning 150's west counts from Sea Island cotton, combed, the mules were running three draws in 59 seconds and spinning from a 22-hank roving, and producing 340 lbs. per week, or 22.8 hanks per spindle. The spinner was earning £4 7s. 6d. per week, as against £1 17s. in Oldham if employed under similar conditions, and paid by the Oldham list and conditions. At another mill which I visited the mules contained 816 spindles each, or 68 dozens long, and they were spinning 135's counts with a 57½ in. draw, and 3½ in. of roller motion, and running 3 draws in 63 seconds, and producing 238 lbs. of yarn per week, or 19.7 hanks per spindle. The rovings were 22-hank, and made from Allan seed cotton with a staple of 17-16 in. long. The spinners were paid standing wages of £4 0s. 8d. per week, and the total wages paid on one pair of mules was £5 5s. 10d., and on similar conditions in an Oldham mill the wages would be £2 17s. 10d. The weekly production per pair of mules spinning 60's counts was 880 lbs., or 32.4 hanks per spindle; 95's counts, 410 lbs., or 23.9 hanks per spindle; 100's counts, 420 lbs., or 25.7 hanks per spindle.

The wages of ring spinners are given by Mr. Ashton as from 25s. to 35s. per week. He thinks that the American cotton operatives are better fed than the English, but not better clothed or better housed. Taking into account the extra cost of living, he thinks the American mule spinner has a net advantage in wages of 40 per cent. that he does not gamble or bet as much as the English spinner, that he is more temperate, and that the general conditions of his life, take them all round, are better.

Both Mr. Ashton and Mr. Wilkinson, the other commissioner, speak doubtfully about the Northrop loom, except where very good yarns are used. The smallest number of Northrops Mr. Wilkinson saw in charge of one weaver was 12, and the largest, 21. Their relatively slow speed (165 picks a minute) impressed him. The average weekly earnings of adult weavers at Fall River he puts at ten dollars (41s. 8d.), and of overlookers 13½ dollars. Summing up, he says:—

"At all the mills which I visited the quality of the yarns was far superior to those used in this country, hence the weaver's ability to look after more looms. Give the Lancashire weaver the same conditions, and he will, in my opinion, equal, if not surpass, his American cousin. No doubt greater wages are earned in America than England, but when rents, clothing, and several other necessities of life are taken into account, I do not think the real gain is so great as it seems to a casual observer. The relation of female labor to male labor appears to bear much the same proportion in the American mills, as in the English mills."

He does not think that Americans work at a higher pressure than English, although they run more looms. The sanitation and ventilation of mills are, as a rule, not so good as in England; the work turned out is not better; the English weaver, according to Mr. Wilkinson, is as well fed, better clothed, and better housed than the American. earns less money, is 10 per cent. to 15 per cent. worse off after meeting necessary expenses, gambles more, has a longer working life, and does not die so young. As to the relative sobriety of English and American workmen, Mr. Wilkinson is one of the few delegates who does not give a verdict in favor of the Americans. He "cannot say."

Mr. Flynn, the tailors' representative, reports on the clothing question. He says, "clothing is as cheap in America as it is with us—that is, for those who buy inferior articles. The whole trend of opinion in America, however, is against cheap, sloppy suits. From three to six pounds per suit are

the prices usually paid. Nor, when the finish or stability, obtained at these prices is considered, together with the higher cost of labor, can it be fairly stated they are too high. At any rate, the American workman, owing in a larger measure, perhaps, to the practice of labelling trade union-made goods, is wholly against sweating, believing that if allowed in one industry, it will soon nibble at the roots of his own wages."

American workmen, according to this authority, certainly wear better clothing, but pay more for it. They are also better fed, lead sober lives, and do not gamble on horse races; but they are not so well housed in his opinion, as English workmen of the better class. American tailors' wages in factories are 100 per cent. more than in English factories, and with the best firms in New York and Chicago tailors can earn three times as much as with the best London firms. "Careful, sober, steady men can save more money than in England, and save it easier, without the pinch and scrape required here. The life of an American workman is superior to ours; nor do I think hard work shortens his life to the same extent as it does in England."

### THE TEXTILE MANUFACTURER'S EDUCATION AND TRAINING.

At a recent meeting of the Yorkshire College Textile Society, says the Textile Journal, the question of the training of those intending to enter textile manufacturing was discussed at some length, and though the opinions of most of the speakers were in accord as to the need of a thoroughly theoretical and practical training, there was some difference of views as to whether an intending manufacturer should specialize or generalize.

We live in times when it is the custom to specialize, in order that the public may be led to believe that we are expert at our particular trade or profession, but this particular doctrine can hardly be said to apply to the individual aspiring to the successful conducting of a textile mill; for, when specialization is spoken of here, it is intended to refer to a certain branch of a textile trade, such as dyeing, designing, spinning, etc., and not to the whole trade itself.

A manufacturer should have sufficient knowledge of every branch of the class of trade he intends to devote himself to, so that he will be able to see that those whom he employs as heads in each department are doing their work correctly and satisfactorily. He should be able to point out any defect in any of the work done, and to know how such defect is caused. He should be in a position to judge both the quality and value of all raw material purchased, and be able to devote such material to such use as it is best fitted for. He should be conversant with the best methods of arranging and distributing the mill gear and machinery, and should understand the characteristic and capabilities of every machine in his mill and on the market. He should understand the working of engines and boilers, and the economy at his fingers' ends, and should also be conversant with the should be turned out of his mill in a given time, and should be able to give advice, or to pass judgment, on any process of manufacture, from start to finish. In addition to this knowledge, he should have the financial part of the business as his fingers' ends, and should also be conversant with the placing of his goods on the market, and the needs of his customers. In a small mill, the manufacturer would have to know all these things in order to conduct his business properly; but in large mills, where there are several partners,

there is more excuse for specializing, for it would be difficult working to have so many masters giving orders! and in such instances it would be better for each to have his own branch to look after. But, even when specializing is desirable, it is much better to first get a good general knowledge of the business, and then to specialize afterwards in any branch. This would enable the manufacturer to take up the reins of any other department in case of necessity at any time, and would raise him above the level of a departmental foreman.

Now the question arises as to what is the best method of training to pursue in order to become an efficient manufacturer. Some men have become manufacturers through force of circumstances, whilst others have risen from the ranks of the workers through industry and perseverance, and have, without much education in their earlier days, acquired a thorough knowledge of every department of the business; and these men have usually been successful in making a name for themselves in the circle in which they trade. But the training which is under discussion here is that of the young aspirant to manufacturing qualifications, who is more frequently the son of another manufacturer, or some other individual who is willing to spend money on having his son taught in the best school, and under the most approved methods available. It will be well then to consider the case of the son of a woolen manufacturer who intends to follow the same calling as his father, and to consider the best means of making him capable of carrying on the business after his father's death or retirement, so as to hold his own against the ever-increasing approaches of competition. It is not necessary to say that a sound commercial education is the first essential, for in these times most people are fully alive to that fact. French and German will be found very useful; but Greek will hardly be of use to the future manufacturer of woolen fabrics. Public schools and the universities are excellent institutions in their way, and are, of course, indispensable for many callings; but for a young man who has his way to make as a manufacturer, a university career, though giving him a certain social tone, which would help him in the world and amongst his customers, would not help him in getting the practical experience most needful to success. A great many manufacturers, who have made money, are anxious to give their sons the best education they can, and they think by sending them to a public school or university they are giving them the best chance in their power. But a B.A. degree is of no use whatever in the textile mill, and the social distinction a 'Varsity career usually carries with it is, in ninety-nine cases out of a hundred, a deterring influence on the acquisition of the practical knowledge which is to-day so necessary to the success of manufacturing. It is too often the fact that such an education, to one intending to enter the arena of manufacturing, is more conducive to the charms of the hunting field, and will not help the young manufacturer to study and understand the men under him, but will be more likely to alienate their confidence in him, and beget that want of co-operation between employer and employed which is too often the case in England. The American manufacturers are, in their relations with their operatives, very much in front of us, and there is no doubt they get a great deal more work out of them in consequence. They are as much in front of Yorkshire manufacturers in this respect as Yorkshire employers are in advance of the West of England.

But to return to the subject of training. It will be found that it will be best for the young manufacturer to leave school at the age of sixteen, and to enter at once on the task of mastering in detail every branch of the trade. At

this age, he will not be so shy of going to work as an ordinary operative as he would if he had been to a public school or university, and were some years older and more sensitive to such a proceeding. If it is intended to send the youth away to the textile training college, it will perhaps be best for him to spend a year at the mill first, so as to get some insight into what is wanted before he goes for his college training. Then he will enter into the scientific and theoretical part with much more vigor and intelligence, and on returning to the mill again after his course be over he will be able to apply the knowledge he has gained with ease and effect. If, however, the youth is to be trained in the practical part of the mill entirely, and has no college training in view, the night classes at the textile school will give him much help in acquiring the theoretical part of the trade, and he will have an opportunity of at once putting to the test anything which appeals to his interest. *It is much better, if it can be managed, for a youth to enter for his mill training some other mill than that owned by his father; for the workpeople in another mill will not be so much inclined to be shy of him as those in his own mill, and will have a greater influence on making him work than would otherwise be the case, for in his parent's mill he would probably feel that he could either work or play—just as his fancy pleased. It should be impressed on the youth that there is no degradation in working at the practical part in order to gain his experience, for do not engineers and others who go in thoroughly for intricate trades or professions have to begin at the very bottom?*

The first process in a woolen manufactory is the sorting of wool, and as this is a knowledge which takes a long time to acquire, the young student should not be kept at it all the day, but should have the run of one or two more departments, such as the scouring and tucking branches, and later on the carding and spinning, to vary the monotony. The foremen in each department should be given to understand that they are expected to teach the student everything they can, and to make him efficient in every branch of their respective departments before allowing him to pass out of same. Every encouragement should be given the beginner to take an interest in his work; and when he is far enough advanced he should be allowed to trace different materials through from start to finish, and to note the effect of finishing after each process. All the samples of wool which come into the mill should be shown the student, and their merits or faults pointed out to him, and, after a time, he should be encouraged to give his opinion as to the wasting properties, felting characteristics, and value of such samples. An occasional visit to the London wool sales will help to stimulate interest in the work, as well as to give the student an idea of how the business is carried on. Every department in the mill should be thoroughly mastered, and everything which an operative has to do should be done by the student, even to the stoking of the boilers and the running of the engine, so that when his training is completed he may be able to judge whether the work is done properly or not. His word and judgment will then be respected, for the employees will know that he speaks not merely for the sake of complaining, but because he believes the thing to be wrong. The young manufacturer will thus gain not only lasting experience, but he will have been brought into touch with the men whom he will afterwards have under his control. He will have learned their little peculiarities, and will have acquired the knowledge of how best to deal with each one in getting the most out of him—a knowledge which will be found to be of great value in keeping matters smooth and pleasant, and in making the business a success.

Where operatives know a master is just and orthodox, they will do a great deal for him and respect his opinion; but should he endeavor, by orders and complaints, to make up for his lack of real knowledge, they will not be long in finding him out, and then his authority is weakened and undermined. It is frequently the case with young manufacturers, who have simply undergone a course of training at a textile college, and who, perhaps have not made the best use of their time, that they come home to the mill thinking they know everything, and that they are the very fountain-heads of wisdom. These mistaken individuals are usually a failure, for they overlook the fact that the training colleges are for the purpose of teaching them the theoretical part of the trade, which they can only turn to good effect by practical application in the mill, and that their education, which they erroneously think to be complete, is only in its initial stage, for nothing can teach like practical experience, and theory can be of no use without practice.

### THE SURTAX ON TIE SILKS.

Speaking of one of the effects of the surtax on German goods, the Shareholder remarks:

In his budget speech, the Honorable the Minister of Finance announced that a surtax of 33 $\frac{1}{3}$  per cent. would be imposed upon manufactures imported from Germany. This left an opening for future arrangements regarding goods imported for manufacturing purposes, as otherwise Canadian manufacturers would be seriously handicapped in their competition with British manufacturers of similar articles, who would not only be free from customs duty on their raw materials, but would receive the benefit of the Canadian preferential tariff over the Canadian manufacturer. It is very important that the latter should know exactly where he stands, and the Minister of Finance should, without further delay, decide and make public what the arrangements regarding the importation of German goods for manufacturing purposes are to be. This is specially necessary in view of the fact that the season is now on for manufacturers to place their orders with German manufacturers. The delay in making the announcement referred to, places the Canadian manufacturers in an awkward position, as not knowing what the duty which they will be called upon to pay will be, they are prevented from deciding on the value of the goods which they will find it advisable to import. In this connection, we would direct special attention to the comparatively new industry in this country of tie manufacturers, whose raw materials, like those of their British competitors, are for the most part made out of silks and other manufactures imported from Germany. These are, we believe, suffering serious injustice from the prolongation of the delay referred to. Before the surtax on German goods was imposed, it was realized that the manufacturers of this class of goods were suffering an injustice, redress of which was universally recognized and urgently called for. In fact, the Minister of Finance admitted this fact, and promised that legislation to remedy it would be introduced. So far, however, the promise is unfulfilled and the injustice is not only unremedied, but it is greatly intensified by the imposition of the surtax, which largely increases the advantages enjoyed by British manufacturers in their competition in this market. The delay to legislate, or to announce precisely what the nature of the legislation in this matter will amount to, is an injustice

which the Government should at once remedy. It is one which we, on behalf of the trade, strongly protest against, and a protest of this kind coming from a friend and supporter of the present Government, speaking on behalf of a large body of manufacturers should, and we trust will, lead the Government to do its duty in the matter at once.

### LACTIC ACID.

Lactic acid is a peculiar organic acid which is found in cheese, and can be obtained by a fermentation process from milk and from cheese. The method of preparation from these sources will be found detailed in most books on organic chemistry. The process is slow—taking some days—is uncertain, and the yield small. About the year 1871, Professor Avery, of Boston, began some researches on the production of lactic acid by fermentative processes, and as the result, succeeded in devising processes for its preparation on a paying commercial basis, enabling it to be used in the textile coloring trades, and more especially in the mordanting and dyeing of wool.

Lactic acid, when pure, is a colorless and odorless liquid, is viscid, much resembling glycerine in these respects; it mixes readily with water and other solvent. To prepare such pure acid, however, is rather costly, and on this account the commercial lactic acid is used, being a clear brown, syrupy liquid, containing about 40 per cent. of actual lactic acid with small quantities of butyric acid coloring matter. These are not found to interfere with the efficacy of the acid in dyeing, but probably increase it. The chief property that has brought it into such prominence in dyeing is its power of easily changing the chromic acid of bichrome into chromic oxide—a form that has greater and more universally applicable mordanting powers than chromic acid, in this respect excelling argol and oxalic acid.

It possesses also another property in that the action of the lactic acid takes place at a lower temperature than is the case with the other assistant mordants, and it has been noticed that a slow action at a low temperature results in a more perfect mordanting than is got by working quickly at a high temperature; greater penetration and more even dyeing is therefore obtained. It is invariably used in conjunction with a little sulphuric acid, the usual proportions for a mordanting bath being 3 lb. bichromate of potash,  $\frac{3}{4}$  lb. sulphuric acid, and 1 $\frac{1}{2}$  lb. lactic acid; with sulphuric acid the chroming takes place more rapidly than without, and when better penetration and more level shades are required, it would be better to use in the mordanting bath 3 lb. bichromate of potash and 2 lb. lactic acid.—Textile Mercury.

—The following process yields a very fast black on cotton:—For 100 lbs. cotton a dyebath is prepared, containing 4 lbs. diamineal black B, 2 lbs. soda, and 30 lbs. Glauber's salt, and in which the cotton is worked for one hour at the boil. It is then wrung out, rinsed, and topped in a fresh bath made up of 4 lbs. aniline salt, 6 lbs. hydrochloric acid, 3 lbs. sulphuric acid, 3 lbs. copper sulphate, and 4 lbs. bichromate of potash. In this bath the cotton is worked for an hour in the cold, then heated to 150° F., and after standing half an hour, the cotton is taken out, rinsed well, and soaped. A fine black fast to rubbing, etc., is thus obtained.—Textile Mercury.

### THE ART OF DYEING.

The ancient Egyptians knew well the niceties of the dyer's art. I myself have dyed wool red by the selfsame process that the Mosaical dyers used; and from the remotest times the whole art was thoroughly understood in India. If to-day I want for my own use some of the red dye above alluded to, I must send to Argolis or Acharnania for it; and Pliny would have been quite at home in the dyehouse of Tintoretto's father (or master); no change at all befell the art either in the East or the North till after the discovery of America; this gave the dyers one new material in itself good, and one that was doubtful or bad. The good one was the new insect dye, cochineal, which at first was used only for dyeing crimson (or bluish red), and for this use cast into the shade the older red insect dye above alluded to, called by the classical peoples coccus, and by the Arabs Al kermes. The bad new material was logwood, so fugitive a dye as to be quite worthless as a color by itself (as it was first used), and to my mind of very little use otherwise. No other new dyestuff of importance was found in America, although the discoverers came across such an abundance of red dyeing wood growing there that a huge country of South America has thence taken its name of Brazil.

The next change happened about 1630, when a German discovered accidentally how to dye scarlet with cochineal on a tin basis, thereby putting the old dye kermes almost wholly out of commerce. Next, in the last ten years of the eighteenth century, a worthless blue was invented (which I don't name, to avoid confusion in this brief sketch). About the same time a rather valuable yellow (quercitron bark) was introduced from America. Next, in 1810, chemical science, which by this time had got fairly on its legs, began to busy itself about the dyer's craft, and discovered how to dye with Prussian blue, a color which, as a pigment, had been discovered about eighty years before, this discovery was rather harmful than otherwise to my mind, but was certainly an important one, since before that time there was but one dyeing drug that could give a blue color capable of standing a week of diffused daylight even—indigo to wit, whether it was produced from tropical or sub-tropical plants, or from our Northern plant, woad.

Now these novelties, the sum of which amounts to very little, are all that make any difference between the practice of dyeing under Rameses the Great, and under Queen Victoria, till about twenty years ago; about that time a series of the most wonderful discoveries were made by the chemists; discoveries which did the utmost credit to their skill, patience and capacity for scientific research, and which, from a so-called commercial point of view, have been of the greatest importance; for they have, as the phrase goes, revolutionized the art of dyeing. The dyestuffs discovered by the indefatigable genius of scientific chemists, which everyone has heard of under the name of aniline colors, and which are the product of coal tar, are brighter and stronger in color than the old dyes, cheaper (much cheaper) in price, and, which is of course of the last importance to the dyer, infinitely easier to use. No wonder, therefore, that they have almost altogether supplanted the older dyes, except in a few cases; surely the invention seems a splendid one.

Well, it is only marred by one fact, that being an invention for the benefit of an art whose very existence depends upon its producing beauty, it is on the road and far advanced on it toward destroying all the beauty in art. The fact is, that every one of these colors is hideous in itself,

whereas all the old dyes are in themselves beautiful colors—only extreme perversity could make an ugly color out of them. Under these circumstances it must, I suppose, be considered a negative virtue in the new dyes that they are as fugitive as the old ones are stable; but even on that head I will ask you to note one thing that condemns them finally, that whereas the old dyes when fading, as all colors will do more or less, simply gradually changed into paler tints of the same color, and were not unpleasant to look on, the fading of the new dyes is a change into all kinds of abominable . . . livid hues. In short, this is what it comes to, that it would be better for us, if we cannot revive the now almost lost art of dyeing, to content ourselves with weaving our cloths of the natural color of the fibre, or to buy them colored by less civilized people than ourselves.

Now, really even if you think the art of dyeing as contemptible as Pliny did, you must admit that this is a curious state of things, and worth while considering, even by a philosopher. It is most true that the chemists of our day have made discoveries almost past belief for their wonder; they have given us a set of colors which has made a new thing of the dyer's craft; commercial enterprise has eagerly seized on the gift, and yet, unless all art is to disappear from our woven stuffs, we must turn round and utterly and simply reject it. We must relegate these new dyes to a museum of scientific curiosities, and for our practice go back, if not to the days of the Pharaohs, yet at least to those of Tintoretto.

I say I invite you to consider this, because it is a type of the oppression under which the lesser arts are suffering at the present day. The art of dyeing leads me naturally to the humble but useful art of printing on cloth, really a very ancient art, since it is not essential to it that the pattern should be printed; it may be painted by hand. Now, the painting of cloth with real dyes was practised from the very earliest days in India, and since the Egyptians of Pliny's time knew the art well, it is most probable that in that little changing land it was very old also. Indeed many of the minute and elaborate patterns on the dresses of Egyptian imagery impress me strongly as representing what would naturally be the work of dye painted linen.

As to the craft among ourselves, it has, as a matter of course, suffered grievously from the degradation of dyeing, and this not only from the degeneration of the tints both in beauty and durability, but from a more intricate cause. I have said that the older dyes were much more difficult to use than the modern ones. The processes for getting a many colored pattern on to a piece of cotton, even so short a while back as when I was a boy, were many and difficult. As a rule, this is done in fewer hours now than it was in days then. You may think this a desirable change, but, except on the score of cheapness, I can't agree with you. The natural and healthy difficulties of the old processes, all connected as they were with the endeavor to make the color stable, drove any designer, who had anything in him, to making his pattern peculiarly suitable to the whole art, and gave a character to it—that character which you so easily recognize in Indian palampores, or in the faded curtains of our grandmothers' time, which still, in spite of many a summer's sun and many a strenuous washing, retain at least their reds and blues. In spite of the rudeness or the extravagance of these things, we are always attracted toward them, and the chief reason is that we feel at once that there is something about the designs natural to the craft, that they can be done only by the practice of it; a quality which,

I must once more repeat, is a necessity for all the designs of the lesser arts. But in the comparatively easy way in which these cloths are printed to-day there are no special difficulties to stimulate the designer to invention, he can get any design done on his cloth, the printer will make no objections, so long as the pattern is the right size for his roller, and has only the due number of colors. The result of all this is ornament on the cotton, which might just as well have been printed or drawn on paper, and in spite of any grace or cleverness in the design, it is found to look poor and tame and wiry. That you will see clearly enough when someone has had a fancy to imitate some of the generous and fertile patterns that were once specially designed for the older cloths; it all comes to nothing—it is dull, hard, unsympathetic.—William Morris in Upholstery Trade Review.

### WOMEN WEAVE CHAINS.

An entirely new amusement for women, and one which promises to have a great run, is the weaving of bead chains. There are small Apache headwork looms which come for the purpose, and in one day a woman can make as pretty a bead belt or chain as may be desired. Chains have been a fad for some time. They began to be popular with the vogue of the lorgnette chain—usually, as it first appeared, a trinket of considerable value, one of the precious metals set with jewels. Gun metal, which is costly enough not to become common, though it is imitated, followed, and is still well liked; teakwood beads came more recently, and with these a great variety of glass bead chains which, having pretty color combinations and bright shades, have been much worn.

Jet chains, too, have been popular, and there are recent designs in gun metal and copper with rhinestones that are beautiful. With all of these and the growing popularity within the last few years of everything relating to the American Indians, long, narrow, woven chains of the Indian beadwork have been well liked, as well as belts and watch fobs and broad pieces of beadwork, used for vestings for gwas.

Small looms, simple but more convenient than the primitive loom of the Indian woman, have now been introduced, and every woman can do her own weaving. There is a fascination in this work, for any combination of color can be obtained. The chains and belts are delightful to wear with summer gowns. They can be made with but little trouble and less expense, and a girl can have belts and chains to match every ribbon.

A weaving outfit costs \$2, and includes the small loom, a spool of linen thread and package of needles, a set of twelve different designs, five bunches of beads of different colors, material enough to make a couple of belts twenty-six inches long and an inch wide. Directions come with the outfit, and a few minutes' instruction is all that is necessary, for the work is simple.

Two spools on a framework with a clamp between and a plug at one end form the little loom. The threads are cut the proper length, tied together and held in place by the clamp, then brought over the spools, plugged in place at the other end, held snugly with each thread in a groove, and the warp is ready for weaving in the beads.

There are really wonderful colors to be found in the beads. There are forty odd different shades, soft tones of rose shading up to deep rich reds, greens of many hues, blue beads, brown, gold, black, and white beads, and the crystal, all small, round beads, but varying slightly in size,

so that one may make a coarser or finer piece of work at will.

In getting extra supplies a regular bunch of beads will cost 25 cents, and there are enough beads in it to make a chain or a belt. A spool of linen thread for the warp will cost 15 cents, and a paper of twenty-five weaving needles the same price. Different widths can be made on the loom and a girl can make a chain three beads wide one day and a belt three inches wide the next.—New York Times.

### MERCERIZATION AND BLEACHING.

Since the advent of mercerization, a question which has frequently cropped up is, whether it is better to bleach cotton before or after the mercerizing is done. Practical men are rather undecided on this point, some preferring to bleach first, while others do the bleaching after the mercerization, and neither side can give any decided reasons for the course they pursue. The writers of the new book on "Mercerization" are also equally divided on this point. The author of the chapter specially devoted to bleaching is most distinctly in favor of its being done before the cotton is mercerized, while in other sections of the book the opinion is expressed that it should be done afterwards. It requires very careful comparative trials to be made with the same makes and qualities of yarns and cloth before the question can be definitely answered, and these trials should be carried out on a working scale. In these circumstances, it may be worth while to put forward the comparative points of the two modes of working.

In favor of bleaching after mercerization, it is claimed that the treatment with the alkali, and the subsequent washing to which the cotton is subjected, constitute practically one of the operations of the ordinary bleaching processes, and to that extent money is saved by omitting it, all that remains to be done after mercerizing being to carry out the actual bleaching operations, viz., the treatments with the chemic and the sour, followed by the usual washings.

The argument for bleaching before mercerizing is that the cotton is then quite pure and clean, is in a good absorbent condition, and will readily take up the mercerizing lye, which, having only to mercerize the cotton, does so in a perfectly regular manner, and with the result that the highest degree of lustre is obtained. The first washings of the goods can be strengthened up and used again for mercerizing other lots, while the last washings will often be sufficiently alkaline to be of service in bleaching cotton yarns or cloth. Again, the fact that after the final washing and drying the cotton requires no further treatment means that the lustre of the finished goods is more likely to be retained than if chemicked and scoured afterwards. Another argument against mercerizing before bleaching is that the cotton contains some 5 per cent. of waxy and other natural impurities, besides various impurities accumulated in the processes of spinning, and, in the case of cloth, in the process of weaving, such as oil, sizing matters, dirt, etc. The caustic soda liquors have, therefore, not only to perform their proper function of mercerizing, but also of acting upon and removing these impurities, and consequently their action is not so efficient. Furthermore, these impurities pass into the washings and render them to that extent impure, and therefore less fit for use again in making fresh lyes. Another point is that the oil and sizing materials are apt to be rather irregularly deposited on the cotton and act as a resistant to the mercerizing action of the soda, thus preventing the latter

from acting as uniformly on unbleached as on bleached cotton, with the result that the lustre is liable to be uneven.

The foregoing are some of the points raised for and against bleaching before and after mercerization. After due consideration of the various arguments brought forward, the present writer is strongly in favor of bleaching first, and mercerizing afterwards, on the ground that better and more uniform results are obtained, although the process may be a little more costly. It may also be added that with bleached cotton somewhat weaker mercerizing lyes may be used than with unbleached cotton, as in the former case they penetrate more readily, and the whole of the operations are thus shortened.—Textile Mercury.

### PHOTOGRAPHIC DESIGNS ON TEXTILES.

Fabrics of silk, wool or cotton can be rendered so sensitive to light by means of chloride or bromide of silver that photographic copies can be made thereupon, and these copies present almost no difference from those produced on paper, as the half tones become just as apparent on the fabrics as on paper, and all the shades are reproduced in half tones, just as they appear in the negative. Now, in woven pictures (e.g., in silk), the half tone is produced by mixing the white warp with the black weft—or vice versa—so that there appear at the dark places more black than white threads, and at the light places fewer. A woven picture can, however, be distinguished from a photograph produced upon a fabric in the manner described by the first glance at the thread crossings. The Austrian inventor, Sczyepanik, has recently patented a method of producing fabric pictures by photographic means in such a way that they perfectly resemble woven pictures. For this purpose he says that the finished fabric is not sensitized, but the warp or weft threads are sensitized according to the character which is to be imparted to the picture. When the warp is sensitized and the weft is not sensitized, and a fabric is made from both, then a negative laid thereupon will print only on those threads which are sensitized—in the present instance on the warp threads—while the weft threads will remain perfectly white, whereby the character of a woven picture will be imparted to the entire picture. In this way many other combinations can be obtained; for instance, by dividing the warp threads into two groups, of which one group comprises the threads of even number and is sensitized, while the other group, containing the threads of odd number, is not sensitized. If, however, it is desired to imitate weavings by photographic means in the most exact manner possible, i.e., in such a way that even the thread crossings are most faithfully imitated, or, in other words, that the several shades are produced by a different number of thread crossings—this can be effected by making the warp or the weft of both simultaneously of threads sensitized to different degrees, together with, in each case, non-sensitized threads, and then interweaving them in such a way that, for instance, by the side of a highly sensitized thread there is located a less sensitized thread, and so on. By this means there is obtained a fabric of small thread crossing repeats, in each of which the thread crossings are formed by threads of varying sensitiveness to light and by non-sensitized threads lying between them. Now, if a negative be copied upon this material, then all the threads, with the exception of the threads completely non-sensitive to light, will be printed under the perfectly transparent parts of the negative, and the non-sensitized threads then form the fundamental thread crossing. The less transparent parts of the

negative are printed only on the parts of the fabric that are sensitive in a higher degree, and, on the other hand, the threads entirely non-sensitive to light or very little sensitive to light receive no impression, so that a smaller number of printed thread crossings appear at these places. The grouping of the more or less sensitive thread crossings is effected during the weaving according to the thread crossings of the given pattern. On copying the negative on such a fabric there will therefore appear printed at the different parts of the picture those thread crossings which it had been intended to print, i.e., upon a fabric made in this way there will, on printing from a negative, appear at differently lighted parts of the negative different numbers of black printed threads and thread crossings formed thereby. The inventor fails to explain one important obstacle to its success, which is that while sensitized threads cannot be exposed to actinic light, the process can hardly be accomplished without light.—Up-holstery Trade Review.

### DECATIZING.

This is an unfamiliar term, meaning a process the object of which is to improve the feel and lustre of textile fibres, a patent for a machine to do this having been recently granted in England. The essential feature of the process is the forcing or drawing of water, steam or air through the material being treated. The "decatizing" roller is permanently fixed in the boiler, being revolved by worm gearing; access to the roller is obtained through a hinged lid in the side of the boiler. A specially constructed axle for the roller is part of the invention, having for its object the removal of condensed steam from the interior of the roller in dry decatizing.

### RECIPES FOR WOOL DYERS.

All the following recipes are intended for 100 lb. weight of wool, and are selected to show how some useful shades can be dyed:

**Prune.**—This color is dyed with 2 lb. acid magenta II,  $\frac{1}{2}$  lb. acid violet M, 10 lb. Glauber's salt, and 2 lb. sulphuric acid at the boil for one hour.

**Cerise Pink.**—The dyebath is made with  $\frac{1}{2}$  lb. pink M,  $\frac{3}{4}$  oz. orange G, 10 lb. Glauber's salt, and 5 lb. alum, working at the boil.

**Bright Scarlet.**—Dye with 1 lb. pink M, 1 lb. orange G, 10 lb. Glauber's salt, and 5 lb. alum, working at the boil.

**Drab.**—Use in the dyebath 1 oz. orange G,  $\frac{1}{4}$  oz. archil substitute,  $\frac{1}{2}$  oz. disulphine blue 2M, 10 lb. Glauber's salt, and 2 lb. sulphuric acid.

**Sage Green.**—A fine shade is dyed with 2½ oz. silk yellow G, 4 oz. archil substitute, 1½ oz. acid green, 10 lb. Glauber's salt, and 2 lb. sulphuric acid, working for one hour at the boil.

**Deep Bronze Green.**—Dye with 1 lb. orange G, 1¼ lb. disulphine blue 2M, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.

**Pale Moss Green.**—Use in the dyebath 2¼ oz. silk yellow G,  $\frac{1}{4}$  lb. archil substitute, 2 oz. acid green X, 10 lb. Glauber's salt, and 2 lb. sulphuric acid.

**Moss Brown.**—Dye with 1 lb. orange G, 5 oz. archil substitute, 10 oz. disulphine blue 2M, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.

**Maroon.**—Use in the dyebath 2 lb. orange G, 3 lb. archil substitute,  $\frac{1}{4}$  lb. disulphine blue 2M, 10 lb. Glauber's salt, and 4 lb. sulphuric acid, working at the boil for one hour.



**Dark Brown**—A fine shade is got from  $1\frac{1}{4}$  lb. silk yellow G, 3 lb. acid carmoisine 6B,  $1\frac{1}{4}$  lb. acid green X, 10 lb. Glauber's salt, and 3 lb. sulphuric acid, working at the boil for one hour.

**Steel Blue**.—Use  $\frac{3}{4}$  oz. orange IV, 2 oz. acid carmoisine 6B, 9 oz. disulphine blue, 10 lb. Glauber's salt, and 2 lb. sulphuric acid.

**Electric Green**.—A fine shade is got by using  $\frac{1}{4}$  oz. orange IV, 4 oz. disulphine blue 2M, 10 lb. Glauber's salt, and 2 lb. sulphuric acid.

**Lilac**.—A bright shade can be dyed by using 5 oz. pink M, 5 oz. disulphine blue M, 10 lb. Glauber's salt, and 2 lb. sulphuric acid.

**Pea Green**.—Dye with 1 lb. tartrazine 1A, 4 oz. disulphine blue 2M, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.

**Leaf Green**.—A good shade is dyed with  $\frac{1}{2}$  lb. orange IV, 4 oz. archil substitute,  $2\frac{1}{2}$  lb. disulphine blue 2M, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.

**Navy**. Use 3 lb. disulphine blue,  $1\frac{1}{2}$  lb. archil substitute,  $\frac{3}{4}$  oz. orange IV, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.

**Dark Navy**.—A good full shade is dyed with 3 lb. disulphine blue, 2 lb. archil substitute,  $1\frac{1}{2}$  oz. orange IV, 10 lb. Glauber's salt, and 3 lb. sulphuric acid.—Textile Mercury.

### STORAGE BATTERY LOCOMOTIVES FOR COTTON MILLS.

The electric storage battery locomotive described below has been designed with special reference to the economical handling of material in mills or other manufacturing establishments. It frequently happens that a single load of raw material has to be distributed at various parts of the works, and, in such cases, much costly rehandling can be saved by shifting the entire car from point to point, and discharging each portion of the load exactly where it is required. A similar economy can be effected by collecting the finished product at the different buildings, and loading each consignment directly into its proper car. The locomotive in question is used for shifting cars while loading or unloading in this manner, and also for transferring material in course of construction from one shop to another.



Fig. 1.—Moving Freight Cars with Horses.

The simple and rugged construction of this locomotive reduces the expense for maintenance to a minimum, probably less than the cost of shoeing horses which it replaces. The operating expenses consist of the cost of power required to charge the batteries, and the pay of one man. Even if charging current is supplied from an independent steam-driven generator, it is cheaper than any other method of handling cars, as there is no waste of energy when the machine is not in operation. A steam locomotive requires

a licensed engineer and an assistant to operate it, and it greatly increases the fire risk.

The disastrous consequences which can result from the sparks of a steam locomotive, when used near highly inflammable material, are illustrated by a recent explosion at the plant of the Northwestern Star Oil Company, in Minneapolis, in which eight men and two women lost their lives. The explosion is believed to have been caused by the sparks from a switch engine, which ignited some oil, while it was being transferred from the tank cars to the tanks in the basement of the wrecked building. In cotton mills the danger is fully as great, owing to the great inflammability of the material handled. A further advantage of the storage battery locomotive is that it can be run on any track or switch without the expense of the erection and maintenance of a trolley wire.

A locomotive of this type has recently been installed at the works of the Massachusetts Cotton Mills, in Lowell, Mass. The original buildings have been improved and extended to meet the requirements of the growing business, and new structures have been added, from time to time, until



Fig. 2.—An Awkward Corner.

the entire plant covers a considerable area. The freight siding is separated from one of the two principal storehouses by the main business street of the city, and from the second of these storehouses by the canal which supplies the turbines of the mill. It is necessary to deliver carloads of baled cotton at either or both of these buildings. Neither a steam nor a trolley electric locomotive is permissible in the store-rooms on account of the fire risk.

Before installing the locomotive, the cars were shifted, one at a time, by three horses harnessed up tandem, as shown in Fig. 1. The store room at the canal is so constructed that the horses would have no means of exit if driven in ahead of the car, and this necessitated sending it "on the fly." The bridge across the canal is just wide enough for the car tracks, and the horses had to turn out before reaching it. To get up speed, it was necessary to start some distance up the track, the "tag holder" (the man at the coupling), the driver and the horses all travelling at their best gait. At the proper moment, the tag holder unhooked the tag or rope fastened to the traces, and ran out from in front of the car. The consequences of a slip or false step are self-evident. In the case of a heavily loaded car, the horses were unable to give it sufficient momentum, and the operation had to be completed by the loading gang, as shown in Fig. 2. The locomotive pushing three standard freight cars is shown in Fig. 3.

This locomotive is built for the standard 4 feet,  $8\frac{1}{2}$  inch gauge, and fitted with M.C.R. standard couplings, making it suitable for use with ordinary railway cars, and on any standard railway track. The length over the bumpers is 21 ft. 4 inches, and the height from the railhead to the top of the cab

is 12 feet 1 inch. The wheel base is 7 feet 6 inches, and permits the operating of the locomotive over a comparatively smaller turntable. It weighs about twenty tons.

As will be seen, the locomotive is "double ended," the cab being located directly in the centre. This makes a very desirable arrangement for switching work, which calls for operation in both directions with equal facility. The batteries are contained in the sloping compartments at either end. This symmetrical disposition distributes the weight evenly on the four wheels, and, as each of these is a driver, the entire weight of the locomotive is usefully employed in traction. The wheels and axles are driven from the gear cases in the cab by means of Renold silent chains suitably enclosed. These chains are the only portions of the driving gear situated below the car body, the motor and gear wheels being mounted in the cab, where they are readily accessible, and always under the immediate notice of the operator. Under these favorable conditions, any reasonably reliable man can be depended upon to maintain the electrical equipment in proper working condition. This is considered a most important feature of the design, as it is a matter of common experience that any inaccessible piece of mechanism will be run with no attention until it finally refuses to operate. When such a condition is reached, a complete shut down is necessary to enable more or less costly repairs to be made by an expert electrician or mechanic. The battery was furnished by the Electric Storage Battery Company, the elements being mounted in tanks of extra depth to prevent the electrolyte from splashing over the top. In mounting the battery, special attention has been paid to protecting it against injury due to the shocks to which the locomotive is exposed in switching. There are two motors, specially wound, for the service. By connecting the two motors in series or parallel, and by varying the arrangement of the fields, an efficient speed control is obtained without wasting any of the energy of the battery by passing it through a resistance. The controller is of the standard vehicle type, and has two levers which control every desired motion of the locomotive. The reversing lever is set to



Fig. 3—Electric Locomotive Hauling Cars (New Way).

point in the direction in which the locomotive is to move, and the second lever controls the speed. These levers are mechanically interlocked, as in the case of a trolley car controller, so that the motors can only be reversed when the speed lever is in the off position. The locomotive may be run with the controller in any notch, there being no transition point on which a careless operator might leave his lever and burn out the apparatus.

As already mentioned, the speed reducing gearing is located in the cab, instead of being beneath the car body. All the gears are machine cut, and run in a bath of oil, in fully enclosed gear cases of the C. W. Hunt Company's standard type. The same company's regular flexible and

insulated coupling is used for connecting the motor to the gear case. There is a separate gear case for each of the two motors. It will be seen that the driving gear consists of two parts, which are exact duplicates of each other. In an emergency, one motor could be cut out entirely, and the locomotive operated by the remaining motor, but with a reduction of hauling capacity. The speed reduction of the gear case is so proportioned to the safe discharge rate of the batteries, the safe capacity of the motor, and to the weight of the locomotive, that neither the batteries nor the motors can be dangerously overloaded. The driving axles are made of the M.C.B. standard dimensions, and run in "Hunt" patent roller bearings, which reduce the friction at these points to an inappreciable amount. The wheels are shrunk in place, and have chilled treads and flanges of M.C.B. standard size and shape. A powerful brake is conveniently located in the cab. An alarm gong is also provided. Experience has shown that in light switching service, the batteries can be recharged at various times during the day while the locomotive is waiting between hauls. For heavier service, it

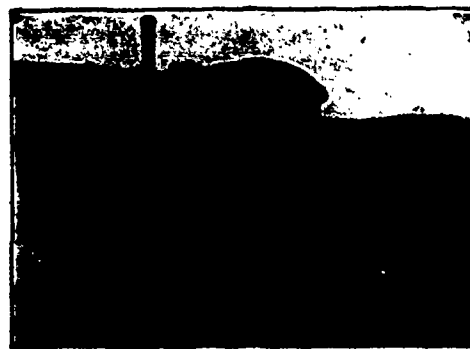


Fig. 4—20-Ton Switching Electric Storage Battery Locomotive.

may be necessary to charge during the noon hour or after working hours in the evening. The battery is automatically protected during charging by well known safety appliances, which open the circuit if the current is excessive, and also when it drops so low as to indicate that the battery is fully charged. The precise arrangement of the charging station depends very largely on the details of the electric plant available, and the builders of the locomotive are glad to advise their customers as to the methods to be employed in each particular case.

This locomotive is placed on the market by the C. W. Hunt Company, of West New Brighton, Staten Island, N.Y. Smaller locomotives for use on a narrow gauge track are built by the same company.

## FINE SPINNING.

The spinning of any fibre depends on its physical characteristics and the manner with which it is manipulated. There has never been invented a mechanical device that has automatically equalled in perfection of work the capability of the human hand, and has exceeded the latter only when it has not been trained to its fullest capacity. It is for this reason that the textile arts of ages ago, when manual labor alone was depended on, remain unexcelled in the present age of machinery. Spinning is no exception to the rule, and specimens of the fine attenuation to which fibres can be spun by hand are to be seen in museums among articles of ancient craft.



There has never been spun by machinery a cotton thread of such exquisite fineness as that to be seen in the Dacca muslin of India, and which can be woven single, says a writer in the Textile Record. The cotton thread of Dacca muslin is a wonderful product of what the human hand can do. It is made from a selected cotton of native growth, but, at the best, with a length of staple inferior to the poorest raised in the United States, and of coarser fibre. A thread of equal fineness spun by machinery would have to be made from cotton with more than two and a half times the length of staple, and even then it would be absolutely unfit for power weaving, unless it was double and twisted, which would require an amount and delicacy of handling that would be impracticable except at an extreme cost.

There are several qualities of these Indian muslins; the best is that known as King's muslin (Mulmul Khas), valued at about \$5 a yard, and the value of the yarn may be reckoned at about \$150 a pound. A specimen of this quality was exhibited at the Philadelphia Exposition of 1876, in the British section, and is probably the only instance of such an exhibit in this country. One yard of it weighed less than five drams, and contained 2,880 ends in the warp and the same number in the filling, making the yarn at an estimated fineness of No. 350 to 400. It has been calculated that some of these muslins have yarn as fine as No. 500, and an example of this is reported as having been on exhibition at the London Exposition of 1862. The yarn in the muslin specimen at Philadelphia had about six or eight filaments in its cross section, which may incidentally confirm the calculation of the yarn being about No. 450.

Dr F. H. Bowman has estimated that there are 140,000,000 fibres of cotton in one pound. Taking the average length of the cotton fibre at  $\frac{3}{8}$  of an inch, we have 3,400,000 yards of fibres were they arranged in one line, end to end (140,000,000 multiplied by  $\frac{3}{8}$  divided by 36 equals 3,400,000). This would give the fineness of a cotton fibre as No. 4,000, or a trifle over (3,400,000 divided by 840 equals 4,000). If a thread contained eight of these fibres in its diameter, it would indicate that it was about No. 500. The fact that an Indian thread can be spun so fine and woven single, is undoubtedly due to the large amount of twist put in it, and to the peculiar compression that is given to it by the fingers of the spinner, and this compression also has the effect of diminishing its diameter, so as to make it appear finer than a thread of equal weight spun on a mule.

At the International Exhibition of 1862, a few yards of muslin were shown, said to have been made from No. 700 mule spun yarn. It was a costly experiment to see what could be done by machinery, and to fix a limit of fineness at which cotton yarn could be woven at all. The yarn showed an improvement over anything exhibited at the 1851 Exposition, due to the introduction of combing cotton by Heilmann's invention. Compared with Indian muslin, the fabric was imperfect and inferior in all points of fabrication, though the cotton used was the best Sea Island that could be procured. There is one thing of no little moment that gives to Indian muslins their great comparative durability, and this is the large amount of twist that is given to the yarn, and which the fingers seem able of imparting more effectually than can be done with machinery. The Dacca muslin thread has, oftentimes, as much as 100 to 110 twists in an inch, while the machine twist may not exceed 80.

Flax fibre is capable of being spun into a thread nearly as fine, if not as fine, as that of cotton. While a yard of Dacca muslin can be made to float in the air at one whiff of the breath, the same can be done with the finest flax fabric.

While the commercial cotton fibre is indivisible, and, therefore, is the ultimate thing, the same is not the case with the commercial flax fibre, which, rather, is a bundle of five to ten filaments cemented together, though easily separable into their ultimate parts of one to one and a half inches long. It is the bundle flax fibre that is referred to in manufacture. A flax thread spun to the fineness of 500 leas, equivalent to about No. 180 cotton, is about as far as machine spinning can practically go, and little progress in this quality of spinning has been made within the last fifty years, more than improvements in mechanical facilities of doing the work. Though there is imported into the United States a considerable quantity of flax thread, much the larger portion of it is coarser than 50 leas, yet occasionally a limited quantity as fine as 400 leas comes in, valued, it may be, at \$15 a pound in the foreign market. Flax, however, like cotton or any other fibre, can be spun into a finer thread by hand than by machinery. The latter is too positive and unyielding, and incapable of correcting any weakness in the slubbing that may at any time occur. Irish flax has been hand spun for cambrics as fine as 600 leas for warp and 1,000 leas for filling. Examples of such dexterity of spinning and weaving have been seen at exhibitions, and are to be met with in museums, and occasionally appear in trade. Cambrics made from such yarn are like gossamer, and resemble a spider's web. A specimen of such a fabric was exhibited at an Irish fair, fifty years ago, with 10,000 threads to the yard, and so delicate was the process of weaving that it took the weaver a month and a half to do a yard, but when finished it was the poetic ideal of Arachne's web that excited the envy of Athena. In a report of the Belfast Exhibition, 1851, a specimen of linen is spoken of, the yarn for which was spun on a hand wheel by an Antrim county woman, to the fineness of 1,120 leas, equivalent to No. 400 cotton. This is the finest flax spinning of which I have any record.

There is no authentic record of any great spinning feat with ramie. This fibre, however, is unequalled by any other in the vegetable world, with the single exception of cotton, and the only reason it is not more largely employed in manufacture is because of the relatively high cost of preparing it for this purpose. Its physical structure would lead one to believe that it is capable of being spun much finer than possibly can be done with flax. Instead of having five or ten filaments, as is the case with the latter, it has seldom more than three and frequently no more than one, and this ultimate filament of fibre is never less in length than the best flax ultimate fibre and sometimes five times longer. There is every reason to believe that with proper preparation the ramie fibre can be spun as fine, if not finer, than cotton.

Wool has never been spun, so far as known, to the extreme fineness of either cotton or flax, of which we have record. So far as the woolen, in contradistinction to the worsted thread is concerned, it is a doubtful question whether there has been any improvement in its construction within the last half century. Charles Vickerman declares that the woolen thread was never so badly or so imperfectly formed as it is now, and he attributes it largely to the present system of deficient number of drawings or levellings of the sliver and slubbing. The tendency to this shortcoming in the construction of the woolen thread was first inaugurated in mechanical spinning with the invention and use of John Gouling's system, when the billy or slubbing frame was discarded. There is not enough levelling for fine spinning. To partially make up for this deficiency in time of need, second or third drawings are made on the jack or mule. At the Philadelphia Exposition of 1876, there were exhibited all

wool white flannels made by the Ballardvale Mills, Ballardvale, Mass., with 20-run warp and 28-run warp. This is believed to be the finest woolen yarn ever spun in the United States. The strength of the warp may be somewhat understated when it is stated that it carried from 130 to 140 picks of welt to the inch.

In the manufacture of worsted yarn, probably nothing has exceeded the fineness of some of the French product, as well as its softness, evenness and fullness of thread for the number. Perfect welt yarn has been spun by the French, according to their system, as fine as No. 178 or 200, metric. This fineness, of course, can be accomplished only by the use of the finest and highest bred merino wool, of good length and evenness of staple, a thing that is becoming scarcer and scarcer.

### A SEALSKIN SACQUE IN COURT.

Judgment was recently rendered at Montreal in a very interesting case respecting a sealskin sacque. The plaintiff, B. T. Couch, a Buffalo citizen, sought to recover from the defendant, Charles Desjardins, a well known Montreal furrier, the sum of \$170, under the following circumstances: In 1900, Couch purchased from the defendant a lady's sealskin mantle. The price paid was \$200, and Desjardins was to send the mantle to Buffalo, Couch having to pay the express charges only. The mantle was duly received by the defendant, but nearly a year after it was seized by the United States customs authorities, who returned it to the owner, Couch, only upon his paying the value of the fur and double customs duties, the whole amounting to \$170. Couch then entered action to recover this amount from the Montreal merchant, alleging that, as the latter had undertaken to deliver the mantle free of charge, except the express rate, he should have paid the duty. In rendering judgment, the court held that no mention appeared to have been made of any duty, and, moreover, sealskins were a prohibited article under the United States customs laws, so that the mantle could not be allowed to pass anyhow. Couch must have been fully aware of the laws of his country, and besides he was informed by Desjardins that the mantle would reach him by some roundabout way. In undertaking to deliver the mantle in Buffalo, Desjardins had himself run the risk of being caught by the customs authorities, and if caught would have suffered the consequences. However, he managed to carry out his part of the contract. The mantle was duly delivered and received, and if, afterwards, it was seized in the hands of the plaintiff Couch, that was his share of the risk in the transaction. The Montreal merchant, who did nothing against the laws of his own country, could not be held responsible for the imprudence of third parties that may have led to the discovery of the smuggling, which constituted a crime in the United States.

### FACTS ON COTTON.

A boll of cotton in its earliest stage of growth is divided into three or four, and sometimes five, compartments, and when the fibres are mature each separate compartment contains certain seeds and cotton which is massed together and forms a carpel of seed cotton. The opening of a boll or pod is caused by the segments becoming reflexed at their sutures simultaneously with the fibres surrounding each seed becoming diffused and somewhat ripened. The contents of each boll is collectively so much seed cotton as is contained in each carpel, and when this has been picked in quantity

it is taken to the ginnery and submitted to the action of the cotton gins, which has the effect of separating the fibres from the seed, and such fibres then become the lint or raw cottons of commerce.

The seeds—as left, as a commercial product are exceedingly valuable, and yield the following substances: oil, meal, hulls and linters. When the hulls are ground they receive the name of cotton-seed bran. The inside of the seed, when the hull has been removed, is often called the kernel, and is sometimes also designated *peeled seed*, *hulled seed*, and *meats*. It is this kernel seed which, when properly treated, yields large supplies of oil and meal.

Examination of the Fibre Under the Microscope.—The cotton fibre is not, as it appears to the eye, a solid, cylindrical, gossamer-like hair, but when fully ripe is shown under the microscope as a flattened hollow ribbon or collapsed cylindrical tube twisted several times throughout its length, and with the outer edges corrugated and indented somewhat similar to a saw. It is also of equal diameter for about three-quarters of its length, and it then gradually tapers to a point. This point is a section almost perfectly cylindrical, and, unlike the rest of the fibre, often composed of solid matter. In growth it is the one, of course, furthest removed from the seed, or, in other words, the apex of the fibre.

Damage to the cotton plant or fibre during cultivation may arise either from the effects of the weather or from the ravages of insects. Too rapid a development by reason of excessive heat may cause many of the fibres to be imperfectly ripened, and a wet cold season also produces the same effect. The presence of these imperfect or unripe fibres leads to a good deal of waste in the succeeding processes, and if passed forward will develop "nep," which must be removed by the carding engine. The short fibres, if they get into the sliver, tell against the production of good yarn, because they do not twist it well or draw properly. In some seasons the ravages of a caterpillar, called the "loil-worm," leads to an enormous number of fibres being damaged, and unless care is taken, these will be passed forward for use. A wet season damages the cotton, not only by giving it an excessive amount of moisture, but also by increasing the quantity of dirt and sand in it, which involves a loss in scutching.

Imperfect Fibres.—Some cottons have a good appearance, but are marred to some extent by the presence of tufts of white fibres which are matted together. This has given rise to the term "gin-cut staple," which is perhaps synonymous with the term "half ripe cotton," meaning that the cotton was picked before it was sufficiently diffused and ripened in the cotton pod. These matted fibres, when examined under the microscope show a paucity of twist when compared with other more expanded fibres. The new crops of cotton are often somewhat gin-cut and bloomy in staple. Half-ripe cotton fibres are weaker and shorter than fully ripe fibres. They are flat and ribbon-like, and contain little natural twist, and it has been proved that they will not take certain dyes.

Cultivation.—The old manner of sowing was by hand, but the seed is now generally put in by means of a machine drill, and is sown very thick, and encouraged in its growth by the liberal application of fertilizers introduced at the time of sowing. Manure, made from cotton seed which has been allowed to rot, was formerly the prevailing fertilizer; but now there are others of an artificial kind, chiefly made from Charleston and Florida rock, dissolved in sulphuric acid, and mixed with ammoniates. The seed, which, after sowing, is lightly covered with soil, germinates very rapidly, and in ten days or a fortnight, two tiny leaflets show themselves on the stem, and three days afterwards the third leaf puts

in an appearance. With the advent of this, when it is fairly developed, the cultivation begins, and there is much to be done in the form of weeding and also of thinning of the plants, which have to be "chopped out," to what is called a "stand," which is a group of plants, left for a selection of the fittest, the "stands" being separated by due distances from each other, about a foot being allowed on high land, while those on low land, where the growth is more luxuriant, are left at distances of 18 to 20 inches.

Next there follows a process of bedding up the plants by ploughing between the ridges. Weeding still goes on and another process of thinning will probably be repeated, until only, in each case, the fittest stand of plants remains. Unfavorable climatic influences will sometimes necessitate replanting. What the planters like to see during the growing period is a summer in which the sun shines every day, accompanied by those frequent and gentle showers which clean the plant and give the necessary humidity to the atmosphere and soil. Two things are dreaded by the planter—excessive heats and abnormal showers. The bloom appears about the middle of June and a couple of months after this the plants are ready for picking. This operation usually is carried on from the beginning of September or end of August, right on into November, and sometimes through this month into December.

As to the soil selection, cotton is at present cultivated with more or less success on nearly all kinds of soil within the region in which the climatic conditions are favorable to its growth and development. It is grown alike on light sandy soils, on loams, on heavy clay soils and on bottom lands, but not with equal success on all these different types of soil. On the sandy uplands the yield of cotton is usually very small; on clay uplands, especially in wet seasons, the plants attain large size, but yield a small amount of lint in proportion to the size of the plants. This is also likely to be the case on bottom lands. The safest soils for the crop are medium grades of loam. On the bottom lands in very favorable seasons the crop often produces a very large yield, but it is not so certain, and in unfavorable seasons the plants are liable to disease and to insect ravages.

The cost of raising cotton is still an unknown and undefined factor in Southern agriculture. According to the best figures that can be obtained from prominent cotton growers, the cost of raising cotton is somewhere in the neighborhood of 6 cents per pound, varying, of course, upon the fertility of the soil and incidental expenses. The opinion is growing that cotton can, under favorable economical conditions, be raised so as to be a sufficient inducement for farmers to engage in it as a cost of 3½ cents per pound.

There is always some interest attaching to the weight of cotton bales, delivered in a season. Of course there is no standard or limit, and there is a constant tendency to increase the weight. This has been a feature of the trade ever since it was founded. In calculating the extent of the season's yield, some regard should be paid to this point of weight of bales, and in making comparisons of one year's crop with that of any other the same point should be carefully noted.

Sea Island Cotton.—The length and width of Sea Island cotton fibres have received the attention of the leading scientists in the microscopic world, and perhaps all are agreed that the fibres possess a coating of ceresine, or vegetable wax, and that when they are fully ripe they have not only a convolute appearance, which lends itself to strength and regularity in the spinning of the best yarns, but also a tubular part, which facilitates the entrance or fixation of pigments

in the dyeing process. The yield of lint from Sea Island cotton is less than from any other kind grown in this country, but on account of the length and quality of the fibre it is adapted to uses to which the other kinds are not suited, and its high market value compensates for the small yield.

American or Mainland cotton may be divided into three classes: New Orleans or Gulf cotton, Uplands or Boweds and Texas cotton.

New Orleans or Gulf cotton comprises the cotton raised in the basin of the Mississippi River, parts of Arkansas and Alabama, Louisiana and Mississippi. The name Gulf is more applied from the fact that the bulk of this cotton is shipped to ports on the Gulf of Mexico. In Europe the word New Orleans only is applied to this class of cotton. Cottons known as Memphis, Benders, Allen-seed, Peelers and so on, belong to this class of cotton. The average length of this cotton is from 1 to 1¼ inches, and its diameter from .004 to .0007 of an inch, it being used for spinning yarn from 28's to 44's warp and from 50's to 70's filling.

Bender or Bottom-land cotton, grown at the bends of the Mississippi River, which are occasionally flooded and consequently well fertilized by the silt of the river, is one of the best grades of Gulf or New Orleans cotton, and is used for spinning the higher numbers previously referred to.

Peelers is a somewhat similar cotton and used for spinning similar counts of yarns; it is bluish white rather than cream colored, and to a certain extent resembles shorter grades of Florida Sea Island.

Uplands cotton is grown in the undulating country between the ocean and the mountains in the States of Georgia, North and South Carolina, Virginia and Alabama, being, as a rule, used for spinning from 30's to 40's filling. Its length of the staple is from ¾ to 1 inch, and its diameter from .006 to .0007 of an inch.

Texas cotton is largely used for spinning coarse warp yarns, its cultivation being constantly increasing. In dry seasons it becomes somewhat harsh and brittle, and cannot be relied upon as well as New Orleans or Uplands cotton. Its length of staple is from ¾ to 1 inch, and its diameter from .005 to .0007 of an inch, it being chiefly used for spinning from 26's to 32's warp and from 32's to 40's filling.

Other Cottons.—Mexico, prior to the conquest by Cortez, produced annually 116,000,000 pounds, but the culture was abandoned in many sections under Spanish rule. In 1860, the industry received a stimulus on account of the war of the rebellion; since 1882 the culture has been still further extended. The State of Coahuila produces the larger portion of the cotton of Mexico. The best cotton, however, is grown in the State of Guerrero, around Acapulco, and the most inferior in Chiapas. The three cotton sections of this country are the east and west coasts and in the central plateau, in the latter irrigation being necessary. A little cotton is grown in the West Indies.

British India, or Hindostan, the part of India where cotton is raised, embraces four principal cotton regions—the Valley of the Ganges, the Deccan, Western India and Southern India. The Ganges Valley is again divisible into two parts, the lower Bengal district and that of the North-west Provinces, including Doab and Bundelcund, lying on both sides of the Ganges and Jumna rivers. In lower Bengal the cultivation of cotton is not of very great importance. In the plains of Bengal, which are so fertile in other produce, the production of cotton is very inconsiderable, and none is exported. The cotton raised here in former times, though short in staple, was the finest known in the world, and formed the material out of which the very delicate and extremely

beautiful Dacca muslin was manufactured. The border lands of the Ganges are too low and marshy and the rainfall too great for the successful cultivation of cotton but the hills back from the river are suitable for this purpose, as they are better drained. The Doab and Bundelcund districts produce almost the entire crop of the Northwest Provinces and furnish a good "India cotton" for exportation. The climatic character of these districts is "first a flood and then a drought," with an inclination to an insufficiency of rain, in great contrast to that of lower Bengal.

The Deccan, or central India, is the great cotton section of India. It occupies the triangular area lying south of the Vindhyan Mountains, in latitude 23° north, and extends to the valley of the Kistna, at 16° north, with the Eastern and Western Ghats on either side. It is an elevated tableland of undulating surface, having soil of great excellence and richness, and of a consistency to retain moisture for a long time. Nearly all the cotton for export is raised within this region and finds its market at Bombay. India, next to the United States, has been the largest producer of cotton. During the period of Civil War in the United States extraordinary efforts were made to extend cultivation, but with so little success that American cotton attained the extreme price of \$1 per pound, which fell rapidly as the breadth of cultivation was restored. It is not equal to our cotton in length or quality of staple and always sells at a lower price. Seed from the United States has been used repeatedly, but deterioration from climatic influences prevents retaining permanently the standard of quality.—Textile Record.

**TEXTILE DESIGN.**

Heavy-Weight, All-Wool, Hair-Line Trousering.

Yarns dyed in stock. Finished weight 19 to 20 ounces for 56-inch width.

Dressed:—

Black backing yarn 3-run	1	eq. 1
Black face yarn 3¾-run	1	eq. 1
Mix face yarn 3¾-run	1	eq. 1
Mix backing yarn 3-run	1	eq. 1

Total threads in pattern  
10)4,200 ends 6-4 width. 4

420 ends section.

105 patterns to section.

Woven: 60 picks to inch; 4¾-runs in size.

2 black,  
2 mix.

4 picks to pattern.

Drawn straight on eight harnesses (9½ reed, 6 in dent equals 75 inches over all).



The weight of fabric figured on basis of yarn being strictly grain weight.

2,100 ends 3¾-run face warp	eq. 5.60
2,100 ends 3-run back warp	eq. 7.00
60 picks 4¾-run filling	eq. 10.20

Average weight 6-4 yd. from loom eq.	22.89 oz.
5.60 oz. face warp shrink 15 per cent. eq.	6.50
10.20 oz. filling shrink 15 per cent. eq.	12.11
	18.70
7.00 oz. back warp shrink 15 per cent. eq.	8.23
Amount yarn necessary for 1 6-4 yard eq.	20.93
18.70 oz. face warp and fill stock at 36½ cents per pound eq.	\$4.266
8.23 oz. back warp stock at 20 cents per pound eq.	.1491
Cost of stock per 6-4 yd. eq.	\$5.757
Cost of mfg. per 6-4 yd. eq.	.5000
	\$1.0757

Stock mixture, face warp and filling:

75 per cent. wool at 44c. = 36½c. per lb.

25 per cent. shoddy at 14c. = 36½c. per lb.

Backing warp mixture:

50 per cent. wool at 44c. = 29c. per lb.

50 per cent. shoddy at 14c. = 29c. per lb.

Mixture for color, 50 per cent. white, and 50 per cent. black, both for face warp. and fill and backing warp.

Above lay-out hair-line is never out of use and always worn more or less every season. Pains must be used in finishing and full face obtained.—Wool and Cotton Reporter.

**NEW COMPANIES.**

The following textile companies have been incorporated:

Pratt Mfg. Co.; \$40,000; Toronto; to manufacture woolen and cotton goods and knitted goods and carpets; E. W. Pratt, J. C. Wilgar, and F. A. Mulholland provisional directors.

Featherbone Novelty Manufacturing Co.; \$150,000; Toronto; to manufacture featherbone, etc., and to carry on the business of hemstitching and accordion-pleating; Alex. T. Reed, H. I. White and Chas. H. Hunter provisional directors.

The Ontario Neckwear Co.; \$40,000; Toronto; E. A. Taylor, T. J. Wardell, Isabella F. Taylor, Ida S. Wardell, and E. J. B. Duncan provisional directors.

The Walkerton Hosiery Co.; \$40,000; Walkerton; John Henderson, Jacob B. Huether, S. W. Vogan and David Traill provisional directors.

The Merchants' Rubber Co.; \$100,000; Berlin; Hon. S. Merner, Oliver Kinzie, T. H. Rieder, Peter Rieder and Daniel Becker provisional directors.

The Simcoe Mitt, Glove and Robe Co.; \$40,000; Simcoe, Ont.; R. A. Spears, John Jago, and John Chandler provisional directors.

The Peerless Suspender Co.; \$40,000; Point Edward, Ont.; Maurice Krakow, Charles R. Morrison and Nanan Krakow provisional directors.

National Woolen Mills; \$150,000; Streetsville; Peter Ryan, J. S. Heath, J. I. Davidson, Alexander Nelson, J. M. Staebler, M. H. Aikins, John McMurehy, George S. Bingham, Samuel Merner and R. A. Wilson provisional directors.

The Ayton Cordage Co.; \$70,000; Ayton, Ont.; George I. Calder, Andrew Schenk, Aaron Wenger, M. B. Flynn and James Allan provisional directors.

## Among the Mills

**Co-operation is one of the guiding principles of industry to-day. It applies to newspapers as to everything else. Take a short in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.**

Wm Thoburn has added a handsome office to his woolen factory at Almonte.

The girls employed in the Delhi Mitt and Rug factory recently struck for higher wages.

The Anchor Knitting Co., Almonte, have added another story to their factory, also a new office.

Logan Bros., Kennew, are fitting up offices outside their woolen mill, and will take the space now occupied by the office into the mill.

The water in the river at Almonte has not been so low for years as at present, but the woolen mills have enough to keep them running.

The Merchants' Rubber Co., about to start new works at Berlin, Ont., to manufacture rubber boots and shoes, will sell to the retail trade.

A small fire, caused by the boiling over of a pot of cement, took place at the Canadian Rubber Co.'s factory, Montreal. The damage was small.

The glove business of W. J. Chapman, Wingham, and the Canadian Glove Works, Acton, will be amalgamated, and the Wingham factory moved to Acton.

An improved system of electric wiring has been put in at No. 1 mill, belonging to the Rosamond Co., at Almonte, as required by the factory insurance companies.

A felt factory is to be established at St. Jacobs, Waterloo county, in a short time. E. W. B. Snider is president of the company, and Edward Ross, of Southbend, Ind., will be superintendent and one of the directors. Machinery is being ordered, and the building will be pushed along at once.

Lee and Taylor, who are now running the mill formerly operated by Wylie and Shaw, Almonte, have enlarged their capacity by a three cylinder card, and have reclothed their garnet machine. Both members of the firm are hustlers. Mr. Taylor was for a number of years with F. K. Stevens, Chicago, previous to coming to Almonte.

Speaking of the woolen mills at Almonte, a correspondent of an exchange says. The mills in Almonte are all busy as usual. There are two good knitting mills here, the Anchor and Almonte Knitting Co. The Almonte is superintended by J. J. Castello, who was for years with the New Britain, Ct., knitting mills. Here also is made the famous Wylie flannels and dress goods by the Elmdale mill. Wm. Thoburn is also well-known as an expert flannel and dress goods manufacturer, also the well-known Rosamond Woolen Co.

Judgment has been rendered at Montreal, in the case of Lamarche vs. the Consumers Cordage Company. The plaintiff claimed \$1,000 damages on account of severe injuries received by being caught in machinery, at the working of which he was employed in defendant's rope factory. The Court found that the machinery used by defendant was of the most approved and modern style, and in perfect condition, and that the accident was due to the fault of the plaintiff himself, who, although warned the previous day not to do so, put on his coat when between the revolving machines, the result being that it was caught and drawn into the wheels, and he was dragged with it. Action dismissed.

The Truro, N.S., knitting mills have begun the construction of a brick addition, which will give the mill a total floor space of 75,000 square feet. The company has its own machine and blacksmith shops, and the machinists are very busy on machinery for the new mill.

A tornado struck Gainesville, Ga., on the 1st of June, tearing the two upper stories from the Gainesville cotton mills and burying many of the employees in the ruins. About 100 were killed. Two hundred cottages and some other buildings were destroyed, and several other mills were damaged to a lesser extent.

On account of a greatly increased business, the Montreal Cotton Co. has decided to put up new buildings at Valleyfield, with a floor space of 73,000 square feet. Additional machinery will be installed for bleaching, dyeing and finishing cotton goods. By the end of the present year they plan to have it completed and machinery in operation. Fred. Lacey is general manager of the company.

The Textile Journal says that hundreds of weavers, men and women, are still migrating from Southeast Lancashire to Canada, where promises of remunerative employment are held out by manufacturers in Valleyfield and surrounding localities. The weaving of grey and plain cloths is becoming almost extinct in certain parts of Lancashire, American competition having adversely affected it during the last few years.

A serious fire broke out recently in the building occupied by the Montreal Cotton and Wool Waste Company. There was a high wind blowing at the time, and when the firemen arrived the large five-story warehouse was a mass of flames. Four firemen were overcome by the smoke and had to be removed to the hospital, and one was badly cut by falling through a skylight. The loss amounts to about \$40,000, partly covered by insurance.

The National Woolen Mills Co. has been organized, and will take over and operate the Streetsville woolen mills, recently carried on by A. W. Brodie, to their full extent. The intention is to confine the production to a high class of goods only. The company controls the upper water power at Streetsville, which later on they will develop with the object of generating electric power, the intention being to dispose of the power to surrounding towns at \$25 per h.p. per annum.

A number of business men from Montreal recently paid a visit to the Paton Co.'s mill, at Sherbrooke, on the invitation of John Turabull, president and managing director. The inspection of the buildings showed splendid arrangements, in which some 550 people earned their bread, comfortably housed in admirably ventilated rooms, with high ceilings, and scrupulously clean surroundings. From the taking in of the wool, its making, drying, carding, and each succeeding process to the weaving, and finally to the display of the goods, was interesting. Far more so was the thought, uppermost, doubtless, in the shareholders' minds, that on the \$600,000 capital during the past five years, 6 per cent. has been the annual dividend. This was said by some of those present to be difficult of achievement, when the tariff gave the trade no more than about 23 per cent. protection, and compelled them to pay all the way from 18 up to 25 per cent for improved machinery, with other disabilities incident to purchasing machinery not made in Canada. Some twenty or thirty styles of goods, from fine ladies' dress goods to heavy overcoatings, linings for rubber goods, and rugs for the Canadian Pacific sleepers were shown in the warehouse.

The corporation of Forest, Ont., wants to sell or lease the carpet factory recently operated there by the Standard Carpet Co., and taken over by the town.

B. N. Fraser, proprietor of the woolen mill at Morden, has purchased the idle felt factory at Brandon and will convert it into a woolen mill. He is asking the town for a bonus.

Gertrude Arrowsmith, an employee of the Telfer Mfg. Co., corset makers, Toronto, had her left arm seriously injured, by being drawn into a box-making machine in the factory.

The Richard Westwood Carpet Mills, of Bloomingdale, Ont., have four looms running on all-wool and union ingrain carpets. The mills are operated by steam power. A new dyeing and scouring plant has lately been put in.

The Bates Felt Co., of Dundas, Ont., is now out of business, after a very brief career. The plant has been bought by the Penman Mfg. Co., and Mr. Bates has been appointed superintendent of one of the departments of the St. Hyacinthe mills, lately taken over by the Penman Mfg. Co.

Robt. S. Fraser is enlarging the shoddy manufacturing department of his works, at Cote St. Paul, Montreal. Extra pickers are being put in, and the carbonizing plant is being re-arranged and improved. These improvements will increase his output of wool stock to 50,000 lbs. per week. Mr. Fraser has a water-power of 100 horse-power, available for his works, in which, besides shoddy manufacturing, he does dyeing, carbonizing, wool scouring and garnetting. The last named is done for other manufacturers on commission, and car-load lots of yarn, waste, and other material for mills pass through his hands for treatment.

In a recent issue it was stated that a Russian had patented a novel process for printing tapestry carpets. Though a novel thing in Russia we understand that this is no new thing on this continent. About 14 years ago, Richard Westwood, proprietor of the Bloomingdale, Ont., carpet mills, then manager for three of the carpet mills of W. and J. Sloane, in the United States., devised a machine, of which the Russian machine is apparently a reproduction, by which 1,600 yards of tapestry carpet were printed in a day, its capacity being actually 2,500 yards a day. The machine was purchased by Cochrane & Sons, of Malden, Mass.

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## Business News.

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The Edmonton Clothing Co. has been incorporated under the N. W. T. companies ordinance.

J. R. D. McDonald has started business under the name of McDonald & Co., Winnipeg, to manufacture tents, awnings, flags, etc.

In another disastrous fire which visited Ottawa on June 4th, R. J. Smith & Co., wholesale tailors, were burned out, losing some \$10,000, partly covered by insurance.

The Ayton Cordage Company, mentioned elsewhere, has been formed for the purpose of making binder twine. The incorporators are farmers of the county of Grey.

E. R. C. Clarkson, of Toronto, has been appointed permanent liquidator for the Patent Cloth Board and Veneer Company, of Owen Sound, which is being wound up by the courts. The liabilities will probably be about \$25,000. The Bank of Ottawa has the largest claim.

Creditors of McFarland, Gray & Southgate have rejected the firm's offer of 50 cents on the dollar.

Frank & Bryce, the well-known linen thread manufacturers, have now their own office and warehouse in Quebec, in charge of J. M. Gillespie, formerly of Toronto.

Permission has been given to the Merchants' Dyeing and Finishing Company, of Toronto, to increase its capital from \$180,000 to \$280,000, and to the Brantford Cordage Company, from \$100,000 to \$250,000.

The Granby Last Factory has been purchased at auction by the Granby Rubber Co., for \$4,455. The former is in liquidation, and will not probably pay a dividend of more than half a cent on the dollar. The Rubber Co. will probably run the factory for their own requirements.

The W. R. Brock Co., wholesale dry goods, Toronto and Montreal, have purchased the old Recollet church property in the latter city, now used for commercial purposes, and when the leases expire will build new and convenient warehouses, and move in. The price paid was in the neighborhood of \$200,000.

The creditors of J. M. Hamilton & Sons, who carried on a wholesale millinery business at Toronto, and who assigned last year, have issued writs against seven leading insurance companies. The firm's stock, valued at \$30,000, was destroyed by fire in January, 1902, and the companies resist payment.

The Court of Appeal, at Montreal, has rendered judgment in the case of the Chambly Manufacturing Company and Willett. This was an appeal from a judgment which condemned the appellant to pay respondent some \$9,000 on account of damage done to his property by their works at Chambly, and to build certain protective works to prevent future damage. The first judgment was unanimously confirmed.

The grand jury at Montreal has found true bills against Bachrack, Blackley and Levy, the three Toronto merchants charged with conspiracy in conjunction with Geo. Margolius, to defraud the creditors of the latter. The curators of the estate have entered an action for \$15,610, against the Canadian Dry Goods Jobbers, and the Bachrack Company, on the ground of an alleged settlement made by Margolius with the defendants to the detriment of his other creditors.

R. A. Spears, of Delhi, Ont., has issued a writ against Jacob Sovereign, of the same place, for \$5,000 damages for libel. The alleged libel is contained in a letter written by Sovereign and published in the Delhi newspaper. The letter gives notice to persons indebted to the Sovereign Glove and Mitt Co. not to pay money owing to that company to Spears. It will be remembered that these two gentlemen went to law some time since to determine their respective interests in the profits of the Mitt and Glove Co. The outcome of the lawsuit was a compromise. It was announced at the time that Sovereign was to pay Spears \$3,000, that Spears was to have the book accounts of the company and each side pay its own law costs. Spears states that under this settlement he was given possession of the books by Judge Robb, the official referee, and that he has proceeded to collect and has been paid some of the amounts due the company. Sovereign publishes his letter stating that the book accounts were not mentioned in the settlement, and that if any money is paid to Spears, those who pay it will have to pay again to him. Spears now sues Sovereign for a retraction and an apology, or failing these, then for \$5,000 damages.

About half the ready-made clothing of the United States is manufactured in New York.

### FABRIC ITEMS.

A new building is to be erected in Stratford, a portion of which will be occupied by the Cardigan Overshoe Co.

The Baneroff Reporter tells of wool 11½ inches long which has been clipped from a sheep on John Sildon's farm.

Blanket manufacturers in the United States expect to advance their prices 5 to 10 per cent. Cotton bedding will also advance 5 per cent.

Joseph Haycock, ex-M.P.P. and leader of the Patrons of Industry while in Parliament, has been appointed inspector of binder twine for Canada.

Pongees, which have been very popular this season, are somewhat scarce in the New York market, and orders for quick delivery are hard to fill.

Interest in linen mesh underwear seems to be growing and retailers are sending in orders for large quantities. It is not only worn in summer but in winter, by many who favor it.

The market for linens continue strong. Offers sent with samples of Scotch towelling recently to the Old Country showed an advance asked in the price of 17 per cent. over what was paid last November.

A writer in the Outlook gives a dreadful account of the condition of some of the sweat-shops in New York, where clothing is manufactured. It is scarcely credible that such a state of things can exist in that city.

W. J. Clarke, Chicago, editor of the American Sheep Breeder, is visiting all the leading flocks in the Provinces of Ontario and Quebec. He expresses the opinion that sheep men will experience good prices for some time to come.

The woolen manufacturers of Canada have determined to make a combined exhibit at the next Toronto Industrial Exhibition. A large space has been allotted to them, and their display is expected to form one of the principal attractions.

A Killaloe business man was fined \$60 and costs at Ottawa, for having in his possession a lot of beaver and other skins, which he was taking to Montreal in a trunk. The skins were confiscated. It is illegal to have such skins, and Deputy Game Warden Loveday had been on the track of these skins for some time.

J. and P. Coats and the English Sewing Cotton Co. have simultaneously issued revised lists showing substantial increases in the prices of sewing and crochet cottons. This course is necessitated by the high prices prevailing for the raw material, both American and Egyptian, which are about 50 per cent. above the usual rate.

Between the ravages of an unusually severe winter and the breaking out of a malignant disease known as big head among their flocks, the sheepmen of Utah, Southern Idaho, and Eastern Nevada, are believed to have sustained losses that will amount to about 50 per cent. Should this estimate be correct, the loss in Utah alone will amount to about one million head.

The Societe Alsacienne de Mulhouse, Germany, have placed on the market an automatic device for regulating the tension of the yarn while being wound on the bobbin in mule spinning. It requires adjustment only when a change in the size of the yarn is made, and is said to need no attention from the spinner during the winding of the bobbin. It is operated by a finger attached to the arms carrying the faller wire.

Some of the rubber firms, in consequence of the increased cost of materials and labor, find it necessary to withdraw all outstanding quotations on mechanical rubber goods.

A new thing in collars for mechanics, railway employees and those generally engaged in employments where the use of laundered linen is rather expensive is the rubber collar. It has a good polish, is stiff and warranted to be free from the odor of rubber. When soiled they can be washed with a sponge or piece of moistened cloth, and are sold to retail at 25 cents each, and will, it is claimed, last three or four months.

A. Carruthers, of A. Carruthers & Co., dealer in hides, wool, etc., Winnipeg, has returned, after spending the greater part of the year in England and Ireland, where he has been handling hides, and strange as it may seem, has been shipping cured hides from there to Canada and the United States. Notwithstanding that some \$30,000,000 worth of leather is imported into Great Britain—largely buff, pebble and sole leather—that country does not consume all its own raw material for the manufacture of leather. Some of the hides imported to America are sent back in the form of leather.

The area devoted to flax in the North Western States will be much less than usual this year. Several reasons are given, the principal being that farmers prefer wheat at 70 cents or barley at 40 to 45 cents, than flax at a dollar. Other reasons are that continued flax growing has exhausted the soil, and the general spread of the so-called flax blight has made it an uncertain crop. A total area of about 3,250,000 acres would seem assured,—a decrease of about 500,000 acres from last year. On the other hand, the average in Manitoba is likely to be increased. Last year it was 42,000 acres, and this year, estimating from the flax seed retained in the Province, it may reach 400,000 or 500,000, though that is probably an over-estimation.

The new linen industry at Swow's Falls, Paris, is the first one of its kind in the world, the result of an invention of B. C. Mudge, a student of the Massachusetts Institute of Technology, whereby the waste product of the straw of the vast flax fields of the west that has been burned upon the field is now converted into linen fibres, one a coarse fibre that is manufactured into linen cloth, and a finer one into bank-note paper. What has required six months under the old process to get the fibre from the straw is now done in six hours. This will reduce the price of linen fibre some 30 or more cents a pound. The company propose in the near future to erect a large factory in the West, where there is grown for the seed alone 2,000,000 acres of flax, which is threshed upon the field and the straw burned.

John Tourigny, of Windsor Mills, Canada, has invented a means of producing a wool fabric or sheet. A layer of cloth is employed, upon a part equal to one-half of which is deposited a layer, uniform in thickness, of carded wool. The other half of the cloth is folded upon the layer of carded wool, and the pattern thus produced is immersed in the liquid bath and worked back and forth therein to carry out the matting step of the process. The work is then removed and the pattern-cloth is taken away from the matted wool, and the embryo fabric is then fulled to the proper thickness: It should be remarked that when the pattern fabric is laid or folded over the layer of carded wool previous to immersing the work in the bath the edges of the pattern fabric should be united together, by sewing them, in order to prevent the wool from escaping during the step of matting. This fulling step is continued until the fabric attains the desired thickness or fullness at all places, and such fulling of course reduces the



size or area of the fabric while increasing the thickness. The fulling having been completed, the article is thoroughly washed in clean water, so as to eliminate the saponaceous liquid, and the fibre is now dried and is ready for delivery or use.

### PERSONAL.

George Pattinson, of Preston, Ont., woolen mills, has been in England on business and pleasure combined.

Ed. Mattock, of Almonte, has resolved to again try the West, and has secured a position in the woolen mill at Rapid City, Man.

George W. Kendry, formerly of the Slater mills, is now assistant superintendent at the Canada Woolen Co. mills, Carleton Place, Ont.

William E. Chalcraft, of the wholesale clothing manufacturing firm of W. E. Chalcraft & Co., Toronto, died of pneumonia on May 29th.

Mr. Holdaway has removed from Carleton Place to Almonte, to take Mr. Lowe's place as boss carder in No. 1 mill. He is a lacrosse player of some note.

Mr. and Mrs. S. H. C. Miner, of the Granby Rubber Works, recently returned from a trip, and were greeted by the employees in a most enthusiastic manner.

Sanfield McDonald, who has been employed in No. 1 mill, Almonte, for a number of years, has gone to Chicago, to take advantage of a more promising opening there.

At Tooke Bros.' shirt factory, St. Henri, L. T. Carter was presented with a dinner service, parlor lamp and toilet set by his fellow employees, on the occasion of his marriage.

Mr. Sheriff, so long manager of the Richelieu Woolen Mills, at Chambly, Que., has retired for a well earned rest. He is succeeded by Thos. Hope, who was his assistant for some years.

David Willox, chemical manufacturer, Glasgow, and bailie of the Clyde, is on a visit to Canada. He is the son of a handloom weaver and rose from humble life to a prominent position in his native country. He is a poet and humorous writer of some note.

—For the fourth time, one of the concrete bins of the Peavey elevator system at Duluth burst, letting out 35,000 bushels of flax.

—McMahon & Granger's wholesale dry goods warehouse, in London, has been burned, with a stock of goods valued at \$35,000.

—John F. Morley, late of the Canada Woolen Mills Co., is suing them for damages for wrongful dismissal and statements derogatory to his business capacity, also for depreciation in the value of shares which he holds in the company.

—Ernest Lehmann, of Manchester, has the contract for the supply of a complete woolen mill in Northern China. The former mill was destroyed by fire during the Boxer troubles, and was of American manufacture. Both American and German makers sought the contract for the renewal.

C. H. Wadsworth, designer at Hall & Co.'s worsted mills, Jamestown, N.Y., has been in Toronto, spending a few days with his cousin, H. Binns, Canadian agent for W. M. Crowe, yarn merchant, New York.

J. E. Harcourt, of the Canada Bobbin Co., Walkerton, Ont., passed through Toronto on his way east, a few days ago. Mr. Harcourt reports business very active with his firm, the works being run to their full capacity.

Harvey J. Carter, now pretty well known to the wool and woolen mill trade, of Ontario, as salesman as well as buyer for his father, E. T. Carter, of Toronto, successor to the late John Hallam, is now in the Old Country, visiting the principal wool centres in Great Britain, France, etc.

W. H. Edgar, for several years engaged in the manufacture of gloves with Thos. Clearihue, at Brockville, and who was spoken of as manager of a new glove factory in that town, has gone to Montreal, where he has taken a position with the Slater Shoe Co.

John McLaren, of Brockville, who held large interests in the Ontario Glove Works, and the Canadian Oak Belting Co., in that town, was killed recently near Kamloops, B.C. by his horse falling on him while he was on a tour of inspection of some timber limits. He was very enterprising and popular and his death is much regretted.

The Markham correspondent of the Toronto World says: William Latimer, a member of Markham Town Council, and for a number of years superintendent of the Markham Woolen Mills, has tendered his resignation as a member of the council. Mr. Latimer has been a public spirited citizen, and his removal is a distinct loss to the village.

William Lee, a spinner in the woolen mill at Dundalk, Ont., who had come there about ten days previously, died suddenly at his boarding-house, on the 6th inst. Deceased was about 63 years old, and was troubled with asthma. Doctor McWilliam was called in and pronounced cause of death to be heart failure. He was buried in Maple Grove Cemetery, June 7th, at the expense of the town, his friends being unknown.

—An article on "Alpaca," in our April number, should have been credited to our interesting contemporary, the Textile Mercury, of Manchester.

## FOR SALE.

I offer for sale the following list of machinery at low prices in order to obtain space for other purposes:

Four sets Davis & Furber 40 in. i on frame Cards, clothed and in good order.  
 Four sets of Self-feeds for same, Bramwell make.  
 Two sets of Davis & Furber iron frame 40 in. Cards, only partially clothed.  
 One 72 in. Gesaner Napper, in fine order  
 One Suction Fan with necessary Piping, etc. Also counter-shaft.  
 One Rag Duster, not in good order.  
 One 24 in. Sarvent Burr Picker, with extra Cylinders, in fine order.  
 One Broadbent Cone Winder, 60 ends  
 Three Tomkins Winders, 10 Spindles each  
 One Butterworth Rag Picker, 24 in., with extra Cylinder.  
 One Davis & Furber, 12 section, 240 Spindle, self-operating Jack.  
 Two Johnson & Bassett, 12 section, 240 Spindle, self-operating Jack.  
 One Davis & Furber, 12 section, 240 Spindle, self-operating Jack, old.  
 Three Tables, 2 Cylinders, Campbell & Clute Knitting Frames, fitted with 12 Gauge for single plush work.  
 One Table, 2 Cylinders for 20 Gauge work.

Various sizes Campbell & Clute extra Cylinders for Knitting Machines.

Two McCreary Garment Brushes.  
 One Tomkins upright Napper.  
 One Calendar Frame with piping for winding and turning rolls of cloth.  
 One Tolhurst 40 in. iron frame, copper basket, Hydro Extractor.  
 One Tolhurst 42 in. all copper, wooden outside case, Extractor, especially for Carbonizing.  
 About 200 extra Bobbins for Tomkins Winders.  
 One steel Soap tank.  
 Several Exhaust Fans.  
 Four large, round Dye tubs.  
 Six Union Special Seaming Machines.  
 Three Union Special Over-seaming Machines.  
 One five apron Kitson Carbonizing or Stock Drying Machine, containing about 4,000 ft. of steam pipe.  
 One Kitson Automatic feed for feeding stock to the above machine.  
 One Kitson Automatic feed for feeding Carbonized stock to the Crush rolls.  
 One set Crush Rolls for crushing Carbonizing stock, Burro, etc.

Will quote low prices for prompt delivery to mak room, as stated above. Correspondence invited.

**Chas. W. Becker, Agt., AMSTERDAM, N.S.**  
 Address Dept 10.



**WOOL MARKETS.**

Considerable activity is reported in the London wool market, and the last Colonial sales closed with prices well maintained. Medium to fine grease merino received strong support from Continental representatives, German buyers operating to a considerable extent. Greasy Adelaides met keen competition, the bulk eventually going to home buyers, and realizing up to 12d. Scoured and greasy parcels were in specially good demand, and up to 10½d. per lb. was paid for the latter. Lambs which are well sought after by the Continent, still maintain their strong position, owing to the small supply. Home buyers purchased large quantities of crossbreds, and Continental, especially French houses, bought freely at full rates. Some good-conditioned New Zealand half-breds sold up to 11½d. for the Scotch trade. Capes were in satisfactory condition, and were secured principally by the Continental section at fully recent rates. Fleeced-washed ruled up to 10d. to the home trade, who also took a few lots of scoureds at rates up to 2½d. The next Colonial sales open on July 7th. Reports from Sydney are that the market continues

strong and healthy, with every indication favorable for future business.

The Boston wool market is quiet. Sales generally are in small lots. Prices, however, are firm, due to the light stocks of old wool on hand. With small stocks carried over and diminished supplies of foreign wools abroad, and indications of another decrease in the Australian clip, holders of wool see no justification for lowering prices, while if there should be a good healthy demand for goods, prices will doubtless go up. There will probably be a decrease in the clip this year, the falling-off being variously estimated at from 25 to 40 million

**Agent Wanted.**

**AGENT WANTED** to represent Shirting and Colonial Flannel Manufacturers, must have a good connection and be able to do a large trade. References, terms, etc., to **JOHN REID & SONS**, Russell St. Factory, Avn., Scotland.

**Situations Wanted.**

**BOSS CARDER**—Boss carder desires position as woolen or felt carder. Understands nearly all cards and feeds, and all grades of woolen and felt goods. Address, R. H. W., care Canadian Journal of Fabrica, Toronto, Ont.

**BOSS DYER**.—Boss dyer wants position. Large experience on raw wool, cotton, rags, warps, silks, union and shoddy piece dyes, fets and wool piece dyes. Am 34 years old, strictly temperate, will go anywhere on trial. Am at present dyer and chemist in a 25-het mill—can furnish the best of references. Address, "W. B.," care Canadian Journal of Fabrica, 18 Court Street, Toronto, Ont.

## Canadian Colored Cotton Mills Company.

<b>Cottonades,</b>	<b>Zephyrs,</b>
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<b>Denims,</b>	<b>Dress Goods,</b>
<b>Awnings,</b>	<b>Lawns,</b>
<b>Shirtings,</b>	<b>Crinkles,</b>
<b>Flannelettes,</b>	<b>Cotton Blankets,</b>
<b>Ginghams,</b>	<b>Angolas,</b>
	<b>Yarns, etc.</b>

WHOLESALE TRADE ONLY SUPPLIED.

### D. Morrice, Sons & Co.

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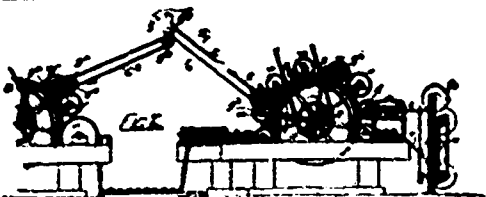
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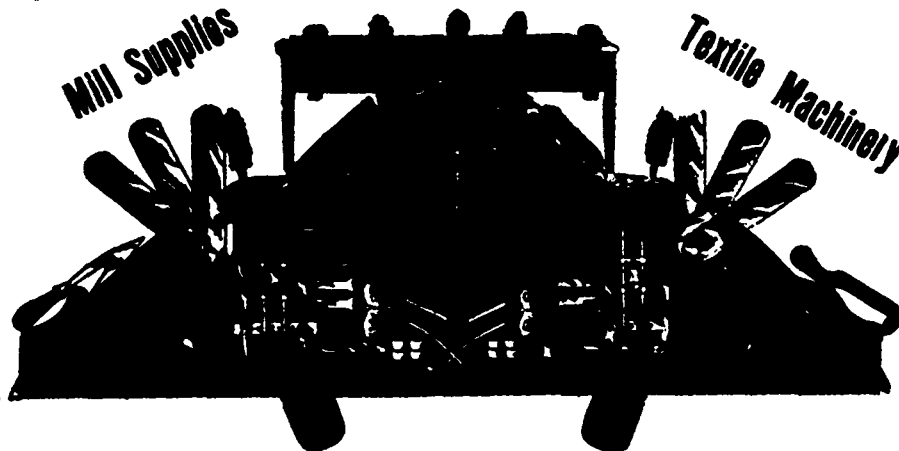
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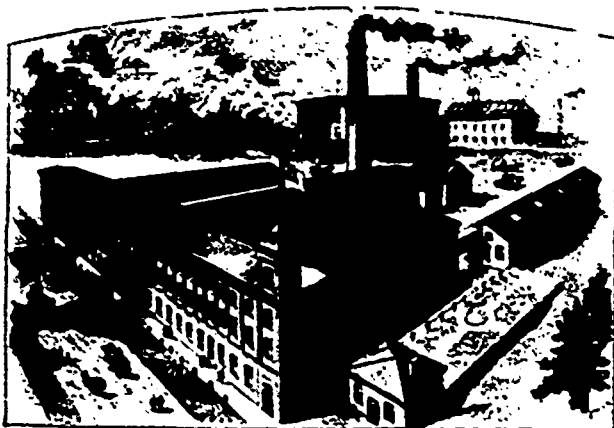
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Webbings & Bindings in great variety, Lampwicks, etc.



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High Test Awarded at Paris Exposition, 1900.

OF SILK, WOOL, COTTON, WASTE, JUTE, etc., it will  
produce fifty per cent. more production than the Garnet  
Machine on one-half the power.—Has no rival on the market.

**Toronto Woollen Machinery Company**

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Sole Agents for Canada and the United States.

Prices on Application.

Prices on Application.

pounds This will, of course, have a tendency to harden the market. But the diversity of circumstances renders it extremely difficult to arrive at a satisfactory conclusion regarding the future course of the market.

Toronto.—The cool weather has had its effect in preventing the new clip from coming forward. Practically no washed is offered yet and very little unwashed. For fleece prices are steady. Washed 15c. to 15½c. Unwashed, 8c. to 9c. For pulled the demand is moderate. Extras, 19c. to 20c. Supers, 16c.

At a later sale in London, on June 11th, demand was good, and prices firm. Crossbreds showed an advance of ¼d., and merinos were ¼d higher.

The German Kaiser recently visited the island of Heligoland, and found that it is rapidly disappearing. Eight hundred years ago it was five times its present size, and as the crumbling away is due solely to geological causes, human skill and power can do nothing to avert its complete disappearance. The rock of which the island is composed contains a large percentage of salt. Germans are more than ever con-

## American Cotton Waste.

Egyptian Comber, Peeler Comber, Sea Island Comber, White Card Strips, Plain Colors Card Strips, Mixed Colors Card Strips, White Soiled Card, White and Garnetted Colors, Oily Card, Garnetted Cotton Shoddies in whites, blacks, blues, browns, grays, and other colors. Cash buyer of Cotton Clips of Waste Cuttings from Canadian Mills.

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firmed in their opinion that Bismarck made an extremely bad bargain when he made an exchange with England, taking over Heligoland.

—Prussian blue at one time was largely produced on cotton both by dyeing and printing, but as it was not very easy to produce the color has practically gone out. Watson Smith recently demonstrated at a meeting of the Society of Chemical Industry a method of dyeing this blue which is at once interesting and curious. When Prussian blue is mixed with hydrochloric acid and butyl alcohol, a colorless solution is obtained. If a linen fent be steeped in this solution and then washed in water, the fent is dyed blue. Propionic acid acts in the same way as butyl alcohol.

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Business continues good, and enquiries numerous, all lines; heavy chemicals firm; advance expected daily on caustic soda:

Bleaching Powder .....	\$ 1 80 to \$ 2 00
Bicarb. soda .....	2 00 to 2 05
Sal. soda .....	0 85 to 0 90
Carbolic acid, 1 lb. bottles ...	0 40 to 0 50
Caustic soda, 60° .....	2 35 to 2 60
Caustic soda, 70° .....	2 60 to 2 85
Chlorate of potash .....	0 10 to 0 11
Alum .....	1 35 to 1 50
Copperas .....	0 70 to 0 8c
Sulphur flour .....	1 70 to 2 00
Sulphur roll .....	1 90 to 2 00
Sulphate of copper .....	0 06 to 06½
White sugar of lead .....	0 07 to 0 08
Bich. potash .....	0 7½ to 0 08
Sunac, Sicily, per ton .....	50 00 to 58 00
Soda ash, 48° to 58° .....	1 30 to 1 40
Chip logwood .....	1 90 to 2 00
Castor oil .....	0 08 to 0 09
Cocanut oil .....	0 10 to 0 11

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BY FAR THE LARGEST MAKERS OF TEXTILE MACHINERY IN THE WORLD

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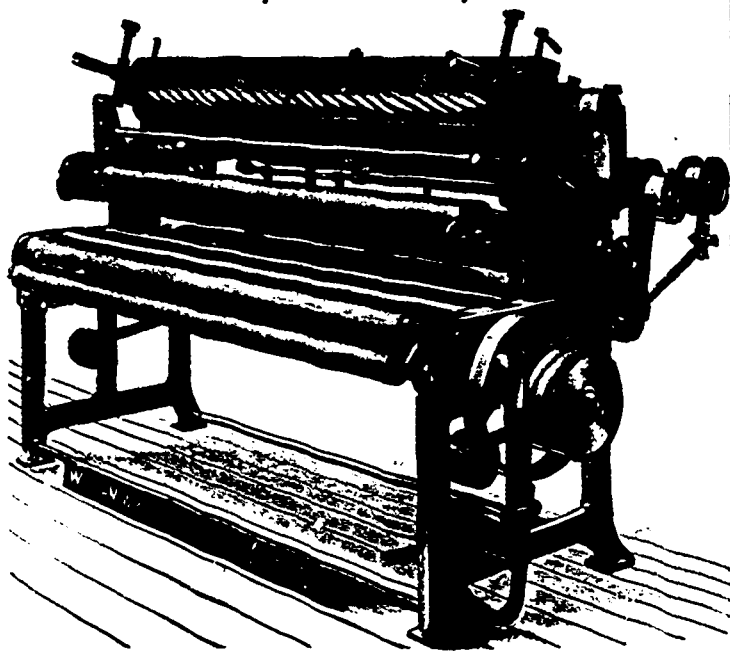
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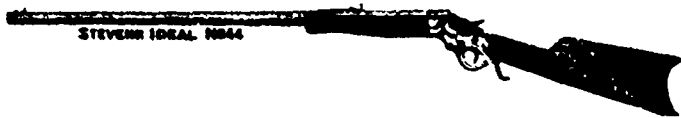
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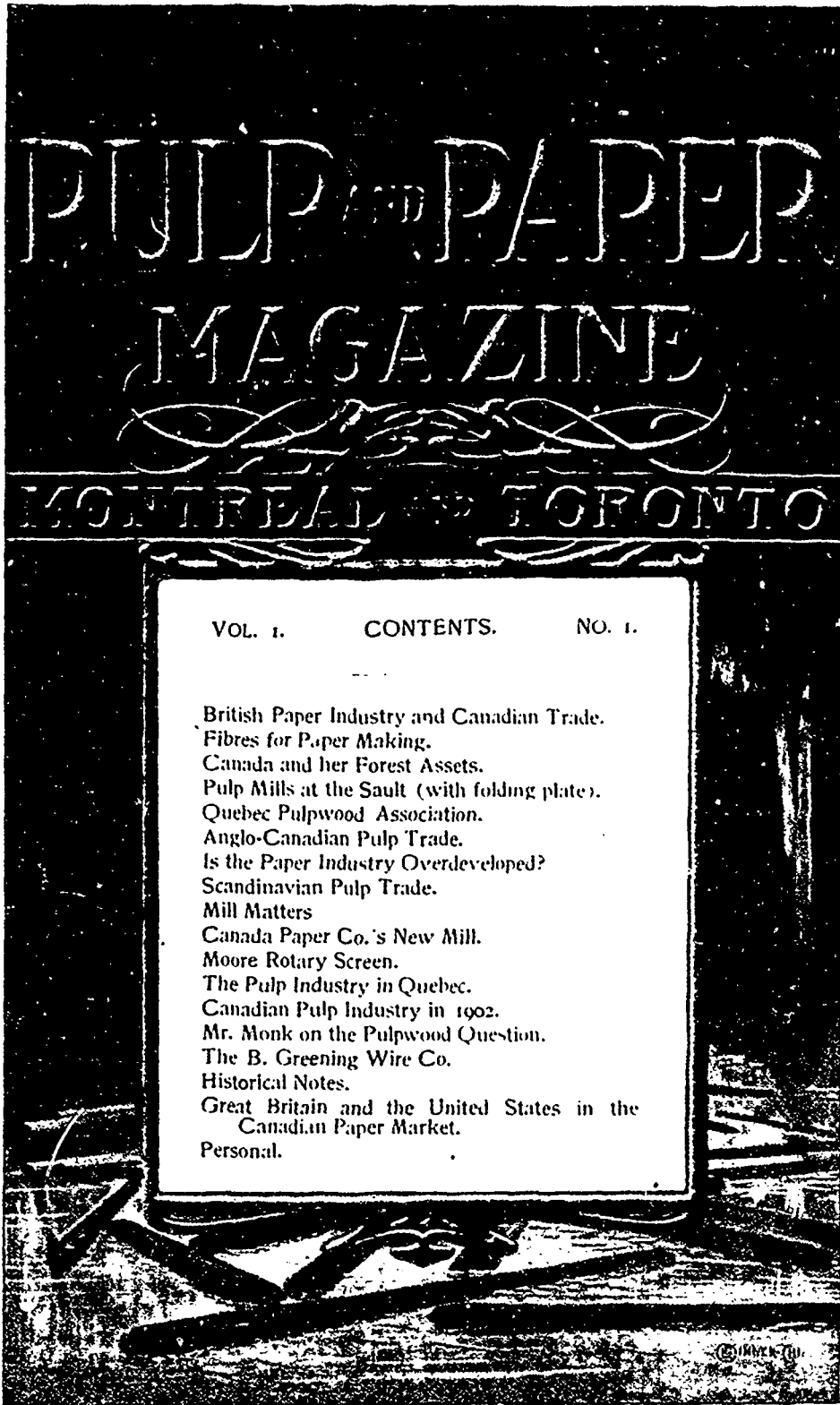
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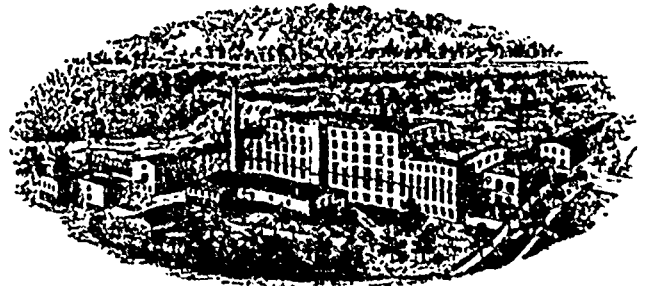
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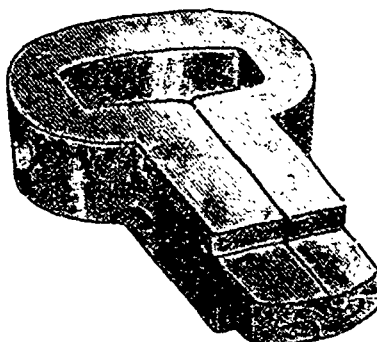
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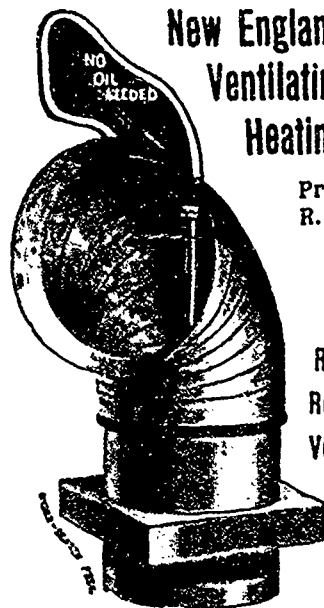
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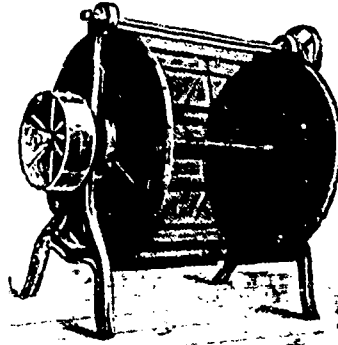
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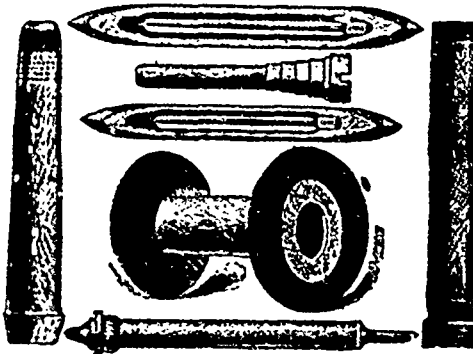
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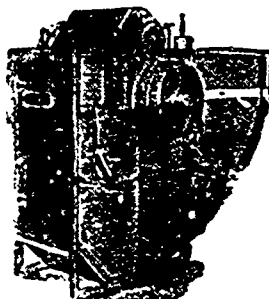
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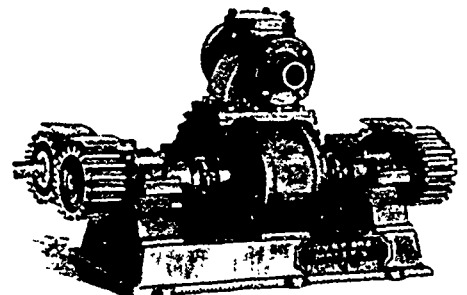
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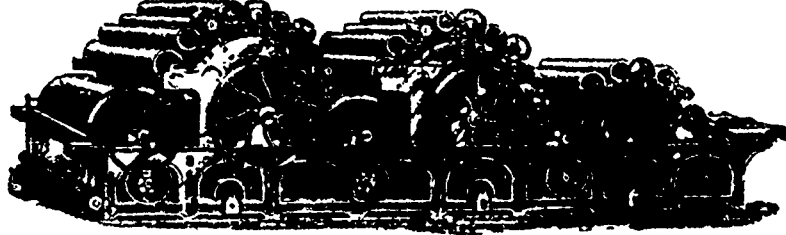
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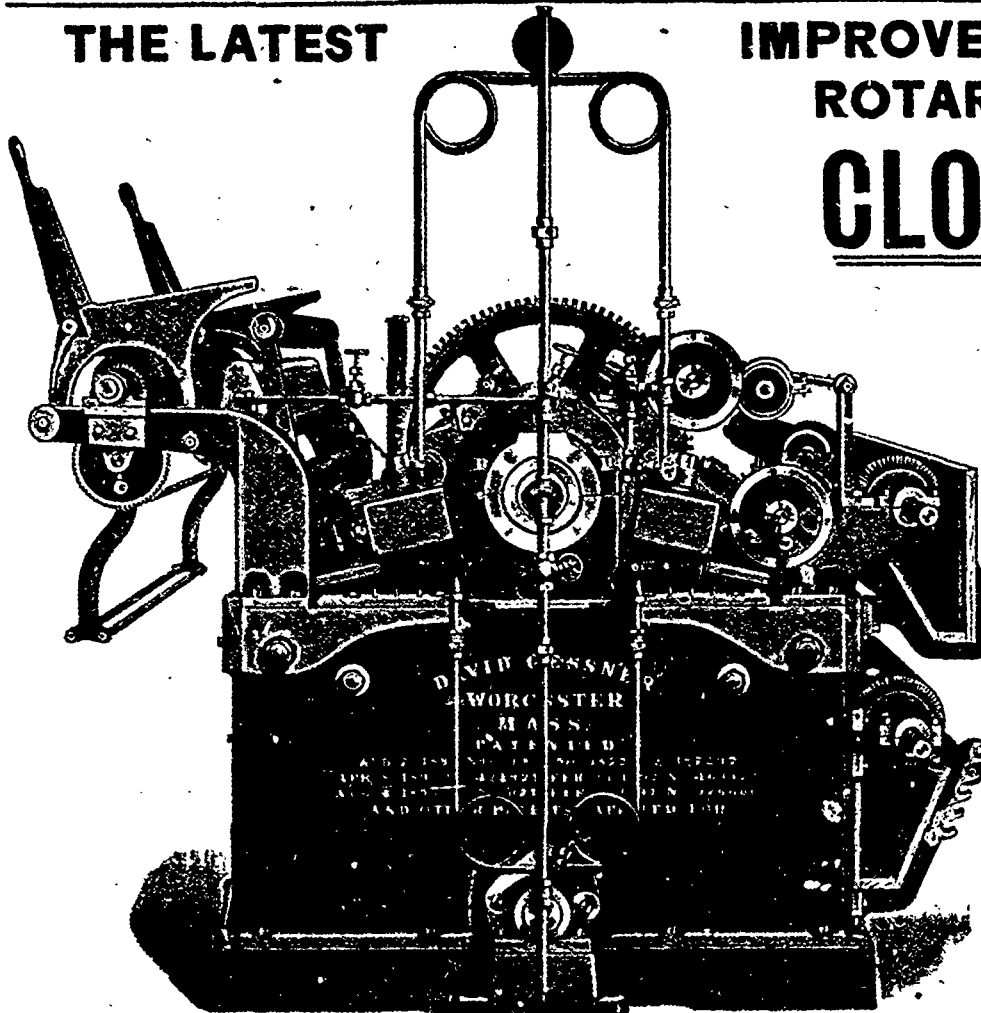
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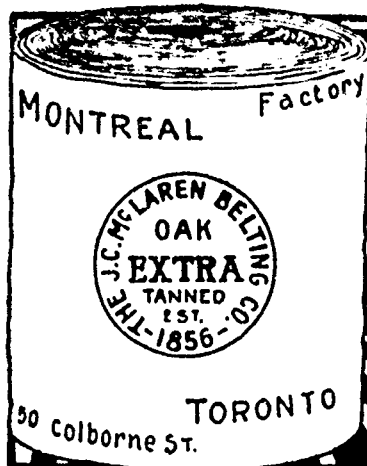
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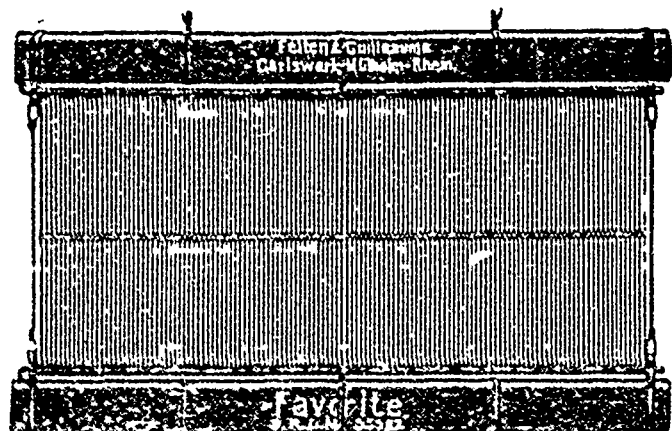
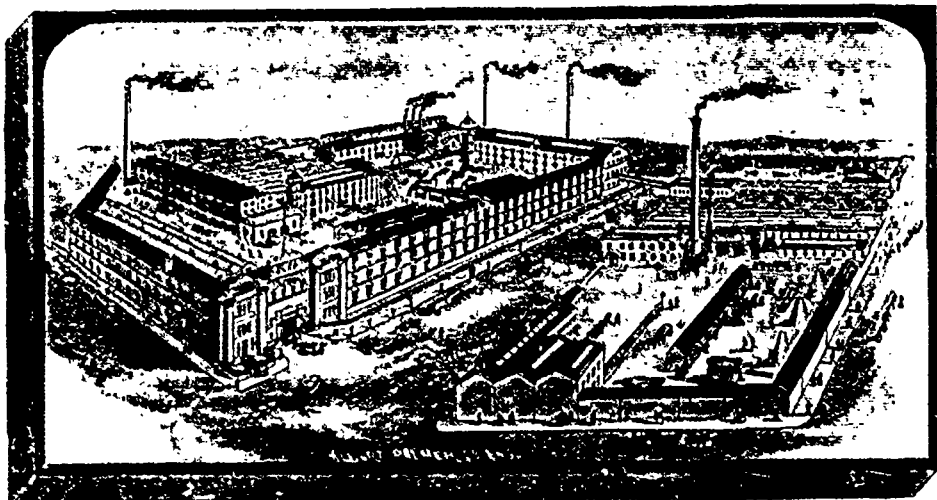
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