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THE JOURNAL OF THE Textile Trades of Canada.

Vol. XVI. TORONTO AND MONTREAL, OCTOBER, 1899. No. 10.

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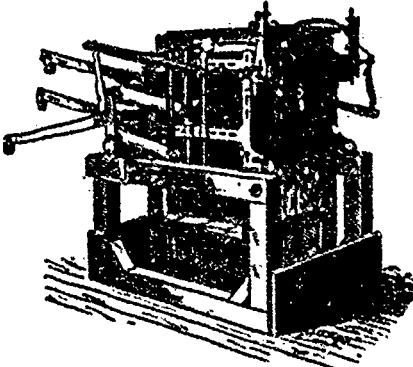
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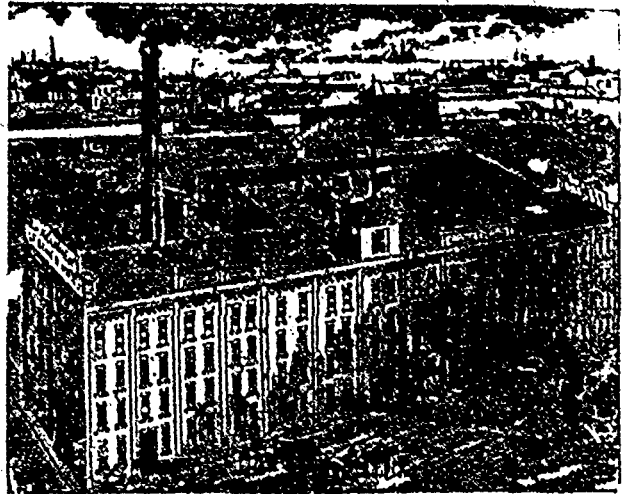
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## Canadian Journal of Fabrics

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### MODERN FLAX SPINNING.\*

(Continued from last issue).

The Russian Government are, however, making great efforts to suppress this nefarious practice, and it is to be hoped that in the interests of all parties concerned they will be successful. The usual conditions of purchase for shipments of Baltic flaxes are as follows: F.O.B. (free on board): The vendor must put the flax on board the ship at place of export; the buyer must

furnish the ship for the time of delivery arranged. C. and F. (cost and freight). The selling price includes the cost of the flax and the freight only; the buyer must insure. C.I.F. (cost, insurance, and freight): The selling price covers all cost, insurance, and freight, until landed in port of delivery. In the C. and F. and C.I.F. arrangements the freight is paid by the purchaser and deducted from the vendor's invoice. In case of shipwreck or fire the vendor is not bound to replace the flax destroyed. The principal Flemish markets are Courtrai, Bruges, Ghent, Lokeren, St. Nicholas, Wetteren, and Malines. Flax steeped in the Lys, in the neighborhood of Courtrai, is, as a general rule, the finest in the world. It is sold at so many crowns per sack of 41 bottes; 1 crown = 4s. 7d.; 1 botte = 3 lbs. 2 ozs. Flemish flaxes retted in holes are known as blue flaxes. Bruges is, as a rule, a good, strong flax, giving a good yield. Lokeren and St. Nicholas are of medium strength and quality, and usually of a silver grey color, and can be hackled fine. Malines flax is not so strong but makes a superior web. Wetteren flax is strong and warpy, and coarser than Malines. Ghent is of medium quality, and usually not very well scutched. Lokeren, St. Nicholas, and Malines are sold at so many stuivers per stone of 6 lbs. 3½ ozs. Bruges is sold per stone of 8 lbs. 4¼ ozs., the price being also in stuivers. The Flemish stuiver is equal to .87 of a penny. Other Continental flaxes, not so well known, are Valenciennes, Hasnon Flines, Douai, Bergues, Picardie, Moy, Ypres, Waerghem, and Wallon. Flines and Douai flaxes are of good quality and light in color. Bergues flax is partly dew and partly water retted. It is a bad color, but is strong, and gives a good yield. Picardie is generally dew-retted, badly handled, hard and poor, and only suitable for coarse dry-spun yarns. Wallon flax is dew-retted. The chief centres are Ath, Leuse, Gembloux, Tournai, and Namur. Another flax much used in Ireland is Dutch. It is generally of a dark green blay color, and has often a good deal of spinning quality. It is sold per stone of 6 lbs. 3½ ozs., the price being in stuivers. The Dutch stuiver equals one penny. The market is held in the Hall in Rotterdam every week. Friesland is a long, strong, and hard flax, suitable for heavy warp numbers. The qualities and sorts are denoted by the following marks: F, FX, FXX, G, GX, GXX, etc. It is imported from

\*Reprinted from the Textile Recorder.

Holland. Friesland flax is possessed of hygroscopic properties in a more marked degree than any other flax, and absorbs and retains moisture so readily as to be easily injured. This peculiarity is said to be due to the flax being impregnated with saline matter, taken from the brackish water in which it is steeped.

The mills get their supplies of fiber either direct from the market or through a commission house. The larger firms employ their own buyers both at home and on the Continent. At home the buyers visit the various markets, where the farmers usually sell their own flax, or they visit the scutch mills and pick up any good lots which the scutchers are authorized to sell on behalf of the farmers. In Courtrai the flax is bought from the factors at their mills, but all the Belgian towns have their weekly markets. When in the market the buyers buy for a couple of hours, while the market is in progress, and then proceeding to the store, take the flax in. When the buyer is bargaining with the farmer, there are certain men who frequent the market and "put in an oar" to help the buyer. For this service they expect a "thrum," or 3d per stone on the flax. The buyer, if he has not time to fight the farmer out, may give the man leave to buy the flax at a certain figure, promising him the usual "thrum." The buyer usually has his own store, for which he pays so much per week or per stone. He has also to pay so much for baling, cartage, etc. When taking the flax into the store, it is necessary to count the stones, test their weight, and examine them, to make sure that they are up to the average quality at which they were bought. Sometimes the farmer may have two sorts of flax in his cart; perhaps it may be grown in the same field, but watered in different water, and for this reason not equal in quality. If the buyer bought the flax by the better sample, and was not told about the other, he must object to take the inferior flax at the same price. In every load there are generally some stones of "thatch" or flax which has been used as the outside covering of the rick, and which from exposure to the weather has become "blashed" and rotten. These stones the buyer must get at a lower price. If the "taking in" has been satisfactorily accomplished, the farmer awaits payment at a place agreed upon, usually a hotel. The buyer makes out the cost of all his buyings, and draws a sufficient sum from the bank to cover. His firm usually has an agreement with the bank to let him have any amount up to a certain figure on that day. Having got the money, he goes to the place agreed upon and pays the farmer, receiving as a receipt the ticket which he gave when purchasing the flax. In some places, such as Strabane, there is a very small open market; for the dealers go round the country, buy the flax from the farmer, and bring it into their own stores, where they sell it at a profit to the buyers at the next market. In some markets the buyer must exercise vigilance, lest the dealers mix the flax, veneering

over poor flax with some of good quality; also that the flax has been grown in the district, and is what it is represented to be, since occasionally dealers buy Strabane or some inferior flax and put it up as Cookstown, etc., sending it to that market to be sold as a genuine farmer's lot. The buyer, having completed his market, makes out an invoice of the flax bought, the quantity of each lot, the number with which it is ticketed, and its price. This invoice, when received at the mill, is entered in the "flax invoice book," under a certain lot number, which commences at the beginning of the season. One or more days' buying in the same market constitutes a "lot," the result of which is made up by itself in a manner to be described. When the flax arrives at the mill, it is examined by the manager or whoever has that duty, and reported upon in a book kept for that purpose. This book, which also records the number of the lot and buying (or in the case of Courtrai, Flemish, or Dutch, the bale number), is invaluable to the foreman hackler, who, when the flax is stored away, is able to ascertain what lot would suit best to lay out and weigh off to give the numbers which he requires. When the flax is "sorted," every farmer's lot should be kept separate and weighed off into separate parcels, in order that the sorter may not have too many sorts upon his table at one time. Where the flax is to be "spread" direct from the "tipple," which is done in some of the best mills, it is advisable to mix suitable buyings before weighing off, in order that the average quality may be as uniform as possible. The flax stores should be large and roomy, and, above all, dry. Asphalt makes a very good floor. Semi-darkness should prevail, except where a good light is required for examining flax. The bright rays of the sun, say, through a glass roof, are apt to evaporate the volatile oil of the fiber, rendering it dry and "hasky," if it does not change the color in some degree. The flax should always be weighed off to the roughers in 2 cwt. parcels, with the exception of the "odds" of a farmer's lot, which, if the flax is to be sorted, should be weighed off separately. The ticket which is given to the rougher with each parcel accompanies the flax right through the roughing, hackling, and sorting processes, until as "dressed line," it is "weighed in" from the sorters. This parcel ticket has spaces in which to enter the weight weighed off, the tow, shorts, and waste made in the roughing, the machine tow and waste made in the hackling, the "tipples" to sorter, and the tow and waste which he makes, together with the "dressed line" weighed in. The latter item, added to the sum of all the tows and wastes, should, of course, equal the weight of rough flax originally weighed off to the rougher, thus proving the correctness of the details. The roughing shop should be lofty and well ventilated, as there is a considerable quantity of dust or "stour" given off by the flax while it is being worked. The "Special Rules" relating to flax spinning mills, issued some time ago by the

chief Inspector of Factories, requires the use both in roughing and sorting shops of a special duct provided with a fan for drawing off the dust as it rises from the hackle. With the object of preventing the dust from reaching the mouth of the workman, this duct is placed behind the tow-box, in front of the operator, and has an opening opposite the hackle, which may be covered by perforated zinc or gauze, and which varies in area in the ratio of its distance from the fan. The dust is expelled from the room into the open air, or if a nuisance is thereby created it may be collected in a chamber containing water. The rougher's tools consist of a hackle and a touch pin. The former is a wooden stock, usually of beech, 16 in. long by 5 in. broad, and 1½ in. thick. An area 9¼ in. by 4 in. in the centre is studded with steel pins 6 in. to 7¼ in. long, and of a thickness at the root of 5 or 6 B.W.G., tapering to a point. There may be 11 pins in a row, and 5 rows in breadth. A rougher's hackle costs about 15s. when new. The touch pin is a steel pin of square or triangular section, set in a wooden or metal stock. The pin is usually of about ¼-in. side, and projects 2 in. above the block. Good touch pins can be made out of old files. The edges should be smooth but not sharp. Both the hackle and touch pin are bolted to a plank forming the front of the bench, and between the rougher and the tow-box, and the ventilating duct already referred to. It is found best in practice to set the hackle at an angle of about 30 deg. to the horizontal, the front portion being the highest. The rougher's berth is the space opposite his hackle, bounded on the right by his own table, 1 ft. 6 in. by 6 ft., and on the left by the table of his neighbor. A well-adapted roughing shop may thus be, say, 30 ft. to 35 ft. broad, allowing ample space for two rows of roughers, or double the width for four rows. The loftier and more airy it is the better; however, it must be at least of such a height as to give 250 cubic feet of air for each person employed, to comply with the rules of the Factory Act. The first operation of the rougher is the piecing out of his flax. He loosens the bands of the stones or heads and separates them into their individual stricks or fingers. Holding these with the root end from him, he separates each into pieces weighing about 2½ ozs., and in bulk containing as much fiber as can be easily grasped round between the finger and thumb. To effect this separation some badly scutched and handled flaxes, more often Irish, require to be rough ended, or the ends drawn through the hackle to open out the matted and tangled fibers. The rougher should first piece out a considerable quantity, depositing each piece by a sweep of the arm upon his table in such a way that they may be easily lifted again without tossing the others. When he has got some work ready, he proceeds with the roughing proper. First, taking a piece in his right hand, and catching it about two-thirds of its length from the root end, with a quick throw backward he frees the end with

a sharp crack, and spreads the root end level upon the hackle. Withdrawing the piece with a steady pull, he leaves the loose fibers or droppings in the hackle, and any which still remain upon the root end of the piece he pulls off, upon the corner pins of his tool. Relaxing his hold for a moment with his right hand, he grasps the loose fibers in the hackle, along with the piece, in such a position that when by main force he withdraws them from the hackle, they are square and level in the root end. He then draws this end once more through the hackle, laps the piece round his right hand, and taking the extreme end in the fingers of the left hand, he laps it round his "touch pin," and, with a skillful jerk of his right arm, breaks off and pulls out the uneven and loose fibers from that end. Turning the piece, and proceeding with the top end, he again goes through the roughing and breaking process, and then, laying the piece upon the table, withdraws his hand without taking out the lap which was formed round it, and leaves it so that, more pieces being added and a "bunch" formed, each piece may keep separate and be easily lifted without tossing the rest. A considerable amount of skill is required to square the root end and to open the flax with a minimum amount of tow. Sometimes the flax is only dropped in the root end and sometimes at both root and top. When the latter is the case, the top must be "dropped" first, as described, but the fibers not gathered from the hackle until the root end has been "dropped" also. Some men in the trade prefer to put the droppings into the top end of the piece, and by this means equalize the bulk from root to top, while others—the writer included—maintain that it is best to have the root end square, as it would naturally have been, had the pulling and scutching been done as they should be.

(To be continued).

## SOUTH AFRICA, ITS PEOPLE AND TRADE.

### ARTICLE I.

The obduracy of the Transvaal Boers and their president in refusing to concede the common rights of man to citizens not of their own race, is turning the attention of the civilized world to South Africa and its people. That quarter of the world possesses unusual interest to Canadians, not only from the standpoint of imperial politics, but from its commercial development and its possibilities as a field for Canadian trade. As a prelude to a review of the prospects for Canadian manufacturers and exporters, it will be well for the reader to know something of the causes of the present political complications.

The Cape of Good Hope, though discovered by Diaz, a Portuguese navigator, six years before Columbus landed in America, and though used as a port of call by the Portuguese for a century afterwards, it remained for two English captains, in the employ of the East India Company—Shillinge and Fitzherbert—to

make formal claim of sovereignty in the name of England in 1620. After some rivalry between the English and the Dutch East India companies, the latter, realizing the salubrity of the climate and the fine soil, sent out an expedition under Jan Van Riebeck—in whose honor the Hon. Cecil Rhodes has recently had a statue erected in Capetown—to make a permanent settlement, and thus began in 1652 the Dutch occupation of the Cape. Little by little the settlements extended back from the Castle on Table Bay, but the life of the settlers was the life of white slaves. They were not allowed to sell their produce to visiting ships, but could only sell to the company at prices fixed by the company. On the other hand, they were not permitted to purchase goods except from the company and at prices fixed, of course, by the company. They and the artisans of the town were, moreover, bled at every turn by the company's officials, and if they attempted to complain to headquarters in Holland their complaints were either suppressed altogether, or the complainants were imprisoned as treasonable persons or otherwise marked out for persecution. The farmers had no title to the lands they brought under cultivation, and were often ejected after working a lifetime upon their lands. They were plainly told that they held their property by grace of the company. Offences, which now would scarcely come under the criminal code, were visited with death in its most fiendish forms. Crucifixion was a common mode of capital punishment, and another was the tying of the victim with his back on a wheel, where his body was broken, and he was left "a prey to the birds of heaven." The rack and the gallows were the common means of punishing slaves. It is not to be wondered at that the Dutch settlers sought to escape this tyranny, and from time to time, in spite of threats and the company's claim of jurisdiction, many got beyond the reach of the company, risking the enmity of the natives in their migration. Thus began the "trekking" of the Boers, which dates back to 1670, and has been a peculiar characteristic of Dutch colonization down to the present day.

During the upheavals of the French revolution, England felt the necessity of possessing the Cape to save her East Indian trade, and after a feeble resistance the Castle capitulated to Sir James Craig in 1795. At the peace of Amiens in 1803 the Cape was restored to the Dutch, but was finally taken in 1806 by Sir David Baird. The first taste of individual liberty and reasonable government enjoyed by the Cape Dutch was given to them by Great Britain. With the advent of Britain at the Cape, the Dutch farmers got their first clear titles to land, they got district courts, where justice was for the first time administered with fairness and without the corruption which had made their masters so odious. The people got their first regular school system, and their first postal system from their new British rulers,

who also did away with the system of punishing offenders by the cross, the wheel, and the rack, those brutal instruments of torture being destroyed at the very outset of the British regime.

Such, in a few words, was the contrast between British and Dutch rule at the Cape. It is not to be denied that between the Home Government and the colonial rulers many mistakes have been made in the subsequent history of British rule in South Africa; but more often than otherwise these errors were made through mistaken leniency or mistaken philanthropy towards Boer and native alternately. Perhaps the most unpardonable grievance nursed by the Boers in the present century was the emancipation of the slaves in the Cape Colony in 1837. Many Boers to the present day believe with apparent honesty that a Kaffir has no soul, and class him with the wild beasts of the veldt. While other nations besides the United States have freed the slaves without compensation to the slave owners, Great Britain voted to the slave holders of the Cape £1,247,000. This was only half the amount of the appraisement, but it must be remembered that the slaves of the West Indies and other parts of the empire had to be freed at the same time at a total cost of £20,000,000—an enormous sum for those days—and the sublimest exhibition of the awakening of national conscience ever recorded in the history of nations. Though the Boers must have known from the agitation that had been going on in England for the preceding thirty years that the emancipation of slaves must come, there was a great outcry when the amount of compensation was announced, and, to make matters worse, from their standpoint, a horde of self-appointed agents, working on the circumstance that the money had to be paid in London, bought up the claims of the farmers for a mere song in many cases, and the enraged slave-owning farmers trekked into the interior to the number of several thousand, founding what is now the Orange Free State, the Transvaal, and a portion of Natal. British settlers had anticipated them in Natal, and after some bloodshed and a few years' hesitancy on the part of the Home Government, British sovereignty was proclaimed over Natal in 1843. Although the British Government had warned the emigrant Boers that they were still British subjects, those who settled in the Free State and the Transvaal were allowed to rule themselves. The Free State was indeed taken under British rule for a number of years, but that rule was withdrawn under the protest of a large minority of the inhabitants, and the State was left an independent Republic in 1854. Under the wise and common-sense rule of the late Sir John Brand, who was president for twenty-five years, the Free State has had till now the best relations, almost uninterruptedly, with Great Britain and with her colonial neighbors. There was but one serious difficulty and that arose out of the discovery of the diamond fields on



the borders of the State in 1867. The land had been owned and was still claimed by a Griqua chief, named Waterboer, and the British Government having bought up his rights, proclaimed the diamond fields British territory in 1871. The Free State, which had claimed a part of these fields, withdrew under protest, but whatever the merits of its claims they were generously compensated by a payment of £90,000, with which the little State was well satisfied, and with which it built its first railway—a road that stands to-day as the best asset possessed by the State. While the Dutch in the Free State and Natal, as well as in the Cape, have settled down to a fairly general friendliness towards the British, the history of the Transvaal Boers has been marred by a strong and persistent hatred of British Government and people. Peopled largely by the irreconcilables, who had left Natal and the Free State on the advent of the British, and utterly unable or unwilling to understand the British idea of government of the Kaffir tribes, they have become the Ishmaels of South African civilization—their hand forever against the Kaffirs on the one side and against the British on the other. They have so far failed to see the advantages of the golden rule, or to read the signs of the times, that they have perpetuated the same ideas of lordship as those under which their ancestors groaned in the 17th century. In 1877, when the country was in a state of bankruptcy, Sir Theophilus Shepstone annexed the Transvaal to the British Empire, without active opposition. Whatever may be thought of this step, it was taken with the best intentions, and with the desire to save the Boers from the destruction which would have been their fate at the hands of the Zulu King Cetuyayo. The step once taken, it is now generally realized that a terrible mistake was made in giving the country back to what has proved a monstrous system of misrule. The British Government, however, gave the Boers just ground of complaint when it left the Transvaal for three years without any representative institutions, and permitted during that time a military oligarchy, composed of men who gave no consideration to the susceptibilities of the Dutch inhabitants, a large part of whom would have been fairly contented under a system which gave them a voice in the affairs of the country. It was unfortunate that just when the British Government began to be awake to the seriousness of Boer discontent, and were actually considering the constitution framed by Sir Bartle Frere, the flames of rebellion broke out, with the result that the British were defeated in three engagements, through the guerilla tactics of the Boer sharpshooters, and then the Gladstone Government restored the republic under that "suzerainty," which has been ever since a source of misapprehension to the Boers.

Before alluding, in our next article, to the present condition of affairs in South Africa, it is worth while to remember this teaching of the past, that wherever the British and Dutch have co-operated either in coloni-

zation, in politics or commerce, they have both prospered. The British possession of the diamond fields was the financial salvation of the Free State; and the British operation of the Transvaal gold fields has lifted that republic from commercial nothingness to a state that has become at once the chief power and the chief danger to the neighboring states and colonies.

—The investigations now being carried on by the liquidators of the Banque Ville Marie, Montreal, are revealing an extraordinary condition of affairs in an institution, supposed to be sound, and to be carried on by men whose morals were not only supposed to be above the pickpocket level, but in the public estimation entitled their possessors to recognition as citizens of credit and renown. The renown is still theirs, but the credit, which the bank directors and officials had freely extended to dead men, bankrupt estates, and bogus notes, is dead. It was not so elastic as the note circulation of the bank, which was found to be several times greater than that set down by the sworn statement of the bank officials. Among the assets of the bank, whose exhibition produced considerable surprise, was the item under current loans, where the estate of Z. Desormeau appeared as owing the bank \$68,781. This estate became insolvent some years ago, and its real estate had been bought in by the bank, and its business since carried on by the Montreal Glove Co., which, by the way, also owes the bank \$23,971. This, in itself, is not improper if the business of the company were enough to justify a loan of this magnitude. We have heard no claims that such was the case. Together with the fact that the loan was a very large one, we have to consider the fact that the directors of the Montreal Glove Manufacturing Company were W. Weir, president of the Banque Ville Marie; F. W. Smith, director; F. Lemieux, accountant; Sam. Lichtenheim, son of vice-president, and Nap. Charbonneau, solicitor to the bank. The directors of the Banque Ville Marie were very kind, indeed, to the insolvent glove manufacturer, Z. Desormeau; to themselves, in the same capacity, they have been even more kind, and surely no one would raise a voice to criticize the charity which the proverb says should begin at home.

#### ADVANCE IN COTTONS.

Following the advances made in cotton goods in the United States and Great Britain the Canadian mills have made increases in most lines, and it is well for the trade to know that, owing to the shortage in the cotton crop and the increase in almost all classes of manufactured goods in other trades, this increase is likely to remain, if, indeed, it may not be followed by further increases. On the 2nd inst. the Canadian Colored Cotton Mills Co. gave notice to the wholesale trade of an advance in various lines, and the Parks' mills have made similar advances. By these new prices awnings and tickings are made dearer by  $\frac{1}{4}$ ¢ a yard, and cheap cottonades by about the same amount. Fancy tickings remain about the same as before. The lowest grade,



and the three highest grades of shirtings have advanced  $\frac{1}{4}$ c. a yard, but medium grades are unchanged. Galateas and Oxfords and a line of cheap gingham are up  $\frac{1}{4}$ c., skirtings and eider-downs  $\frac{1}{2}$ c., and flannelettes  $\frac{1}{4}$ c. Napped sheetings advance 1c., and shaker flannels  $\frac{1}{2}$ c. Cotton blankets have risen  $2\frac{1}{2}$ c. per pair. In remnants of shirtings, tickings, flannelettes, etc., the rise has been about  $12\frac{1}{2}$  per cent.

The Dominion Cotton Mills Co. have also issued a list of prices showing an advance of  $\frac{1}{4}$  to  $\frac{3}{8}$ c. per yard, or about 9 per cent., on gray sheetings, and an advance in bleached goods of 5 to  $7\frac{1}{2}$  per cent.

#### NEW ENGLAND COTTON MANUFACTURERS' ASSOCIATION.

The above association, which for the first time in its history held its meeting in Canada, assembled in Montreal on the 5th and 6th inst. A report of the meeting will appear in our next issue.

#### SOME CAUSES OF STAINS, STREAKS, ETC., IN FABRICS.

Stains, blotches, mildew, odors, streaks, slats, etc., will probably always appear more or less in fabrics of all kinds. There are many reasons why these defects cannot be entirely overcome. But they may be kept down to the least possible quantity with care. This is demonstrated by the varied condition of goods from different mills. Mildew stains, as is probably known to most finishers, are the result of heat and moisture causing fungi, resulting in the destruction or partial destruction of the colors in the goods. If the dyer, washerman, fuller, or finisher permits a piece of wet cloth to lie in a hot place for a number of days, fermentation begins after a certain time, and mildew is soon developed. The mildew stage is almost reached time after time in very many mills. This is the case where one department is ahead of the other to such an extent that the goods are piled up in the washing, dyeing, or fulling rooms. The pieces underneath frequently reach that stage of fermentation where, even if the dyes are not affected, the fiber is touched and weakened, resulting in tenderness of the goods. Such goods will not stand the tension strain.

The remedy for the mildew evil is to prevent the piling up of wet goods for any length of time. But the trouble may not be detected until too late. There are two stages of the mildewing period; if taken at the first stage, when the goods are lightly touched, a good soaping and washing will remove the stuff and leave the goods apparently in as good a condition as before. When the last stage is reached, however, a fungus growth is produced, and there is no known process for completely removing it. Of course, some energetic scouring, washing, and re-dyeing of the goods to cover the staining will so cover the affected portions that they may be sold, but still they are not right. There is a final stage of the mildewing which so works upon the cloth that the appearance after washing is as if the places affected were scorched. The coloring is permanent, and the places become so tender that one can push his finger through the texture. Such pieces should not be sent to market except as remnants to be cut into shorts, and even then only those portions not touched should be used.

The cause of slatting, blotching, and streaking of many a fine piece of goods may be directly traced to the bunching or twisting and knotting of the pieces in the washing, dyeing, and fulling. Some men put the goods into the machines and expect to run for hours, and keep in touch with the one side of the mill for the whole period of milling. The other side and the centre, not coming into contact with the knockers, sides, or friction rollers, would, of course, receive a different treatment, resulting in streaking the goods from end to end. The

difficulty is remedied by occasionally turning the strings, opening them out, and seeing that all portions of the fabric are getting equal treatment. If there are four pieces under way, and they are solid colors or all white, they can be left to run with only an occasional examination. But if they be fancies, they require to be watched from start to finish. Some fancy colored pieces are so delicately colored that the tints are altered or dulled by simply stopping the washing and fulling long enough to change the run of the goods. The liquor has a chance to cool and change. In such a case put the goods back without renewing the liquor. Odors arising from mould usually result from the cloth having been stored in a damp place; but odors of oil, grease, dye, etc., are the result of defective manufacturing, and can be remedied only at the mill. To prevent streaks from flocking, the goods should be backed to keep the flocks from the face. Automatic flocking devices work well as a rule, but for ordinary purposes a slot about 4 in. wide must be cut into the front of the mill, and bearings for the rollers arranged. The flocks box is nailed or screwed up, and the flocks introduced into the box, from whence they are carried between turning rollers down to an apron. The latter revolves over the top rollers, thus carrying the flocks along and depositing them into the mill throughout the slot. The rollers are the width of the mill. They can be made of wood.

Sizing stains sometimes result from the use of ingredients of improper strength. The flour in the sizing is generally allowed to ferment for some time before it is introduced. It is then mixed and applied. The mixture should be tested before using by means of Twaddell's instrument, which is adapted for ascertaining the specific gravity of liquids. It consists of a tube, at one end of which two globes have been blown, forming a sort of double bulb. The lower one contains mercury enough to partially sink the apparatus in water, the upper bulb being filled with the air to keep the apparatus vertical. Mercury is used for weight in the lower bulb. The tube sinks in water to a given point, which is either marked permanently upon the stem or is indicated upon a slip of paper placed inside the tube before the top thereof is sealed. This slip usually carries a scale of equal spaces or degrees. To read this scale, multiply the number of degrees by five and add 1,000, which gives the specific gravity of the liquid.

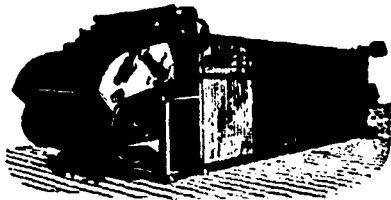
The production of streaks and slats may be due to poor carding or spinning. A great trouble with some carders is that they depend too much upon subsequent processes to remove lumps, even in sliver. The product from the card in the ordinary mill goes right to the spinners to be spun, and the carder knows that there is no other chance to remedy bad work. If we examine his work and find it irregular, broken, twitty, or full of specks and burrs, the conclusion may be drawn that the machines are not kept in good order. A glance at the carding engines will probably reveal the fact that the wide carding points are clogged with lint or dirt, the journals gummed with dried oil, the rollers not set right, the belts loose and flapping about, and the steel points of the clothing bent and dull. Then, again, the cause of nits lies with the carding, through strippers neglecting to strip regularly. Use good wire, well ground, to avoid this. One of the principal advantages of hardened and tempered cast-steel wire is its durability. On account of its stiffness, resulting from its treatment during the process of tempering, the wire does not get out of place. This, as will be seen, secures a positive carding surface. This condition of the card wire enables it to hold well to the fibers during the process of carding. When we speak of self-clearing, we mean that the carding surfaces will not clog up.

Insufficient twist in the yarns is the great evil. The aim of the spinner is to produce yarns that will weave well, yet show a fine, soft finish to the goods. To do this it is frequently necessary to reduce the twist of the yarn, otherwise the goods finish hard and wiry. In order to avoid the harsh feeling, the spinner often goes to the other extreme, and makes the yarns with not enough twist in them, which always results in baggy goods. To attain the correct amount of twist for a lot of yarn requires much skill.—The Textile Mercury.

### MODERN WOOL DRYING.

Until the past few years a wool dryer of any considerable capacity that was economical in labor, floor-space and heat was an unknown quantity, and, until the advent of the automatic continuous machine, advantageous drying was one of the principal difficulties experienced by woolen manufacturers.

After many long and tedious experiments the Philadelphia Textile Machinery Company, Hancock and Somerset streets, Philadelphia, Pa., produced their now famous "Cyclone" automatic continuous machine for drying wool, which marked the beginning of a decided era of advancement in this branch of the industry. Under all the old systems it was imperative that a uniformly low temperature be maintained in order to prevent harshness in the fiber (one of the chief features in successful wool drying), consequently, the capacity was comparatively small, and the expense of drying great. Sometimes, however, in order to meet the requirements of a larger capacity a high temperature was used, greatly to the detriment of the stock.



As a result of their experiments the Philadelphia Textile Machinery Company found that harshness was produced by two causes, i.e., a high temperature on dry stock, and a lack of air circulation, or, in other words, a baking of the stock. They also learned that by subjecting the stock to a high temperature, say 180 degrees, upon entering the dryer, and gradually reducing it by means of their successive compartment system until it emerged from the machine at the comparatively low temperature of 110 degrees, that the result obtained was in reality the same as by cold air drying. The grading of heat in the successive chambers produces a soft fiber, free from harshness when dry, which is due to the fact that on entering the dryer the stock contains its maximum amount of moisture, which effectually counteracts the bad effects of the high temperature to which it is subjected. The actual temperature of the stock at this stage of the drying is, however, much less than that of the air in the enclosing chamber. The greatest amount of moisture is, of course, evaporated in the first compartment, and as the stock passes on through the successive chambers the temperature is reduced to correspond with the amount of moisture still remaining, until the wool finally emerges from the dryer soft and lofty, as well as dry.

The machines range in capacity from 2,000 lbs. to 15,000 lbs. per day, and are built complete in such a manner that they can be readily taken down and shipped in compact form. The many Canadian mills in which they are installed have found a very welcome decrease in the cost of drying, as well as in the improved quality of the stock, since their use began.

### CARBONIZING AND DYEING.

The process of carbonizing wool has for its object the removal therefrom of such extraneous matter of vegetable origin as is accidentally mixed with the wool fibers, or which actually formed part of the wool as it existed in the previous condition of yarn. This process is one that should be carried out with careful attention to details, so as not to cause any injury to the wool fibers, which will then not take kindly to the colors, writes the editor of the Textile Mercury. When acids alone are used the trouble is reduced to a minimum, but the probability that overheating can take place is great unless care is used. Such wool fibers, when subsequently dried, do not offer any difficulty in dyeing, especially when used in conjunction with good wool stock, and dyed in an acid bath; but if carbonization has been done with some of the chlorides—say of zinc, aluminum, or even magnesium—then the traces of these substances left in the carbonized wool are quite likely to give rise to unevenness, unless proper and efficient washing is resorted to, which will in most instances prevent any trouble. Sometimes when such stock is brought into soap solutions or mixed with some stock containing vegetable or mineral oils, there is a liability to cause the formation of bodies that will repel the dyes and cause irregular shades to result. As a rule, the extracted stocks are never very satisfactory for anything else but blacks and other dark shades generally, into which enormous quantities find their way. The use of carbonized stock in making cloths is continually growing, and increasing the demands made upon dyers to satisfactorily cope with this grade of goods—to say nothing of the use of shoddy (cotton and wool waste mixture). For the proper dyeing treatment of these, we believe the alizarines are admirably adapted, although we have seen a number of recent samples of cheap cloths for men's wear that were made of shoddy of a rather crude quality, but the blacks, blues, and browns shown dyed upon them were excellent, and were obtained from another series of dyes entirely. Just how such fabrics would stand is an open question, but it is asserted that large quantities are sold.

### LITERARY NOTES

As the October Century appears simultaneously with the reception to Admiral Dewey in New York, the timeliest of its contents is Rear Admiral Sampson's hearty tribute to the hero of Manila, whom he ranks with Nelson and Farragut. This is preceded by an article of cognate interest—Lieut. Edward W. Eberle's account of the Oregon's great voyage. The frontispiece of the magazine is a portrait, drawn by John W. Alexander, of the Hon. John Morley, M.P., whose historical study of Cromwell is to begin next month. A study of Mr. Morley himself, by an anonymous M. P., accompanies the portrait. The number opens with a profusely illustrated paper on "Fascinating Cairo," by Frederic C. Penfield, late diplomatic agent, and author of "Present-Day Egypt." From the pages of his well-filled diary the Hon. John Bigelow has extracted a series of passages relative to the German statesman Von Bunsen, his friend and correspondent for many years, and to the group of celebrities to which Von Bunsen belonged. A picturesque view of "The Streets of Peking" is given by Miss Scidmore, with reproductions of many photographs. Major J. B. Pond relates his reminiscences of "A Pioneer Boyhood" in Illinois. Special literary interest attaches to the announcement of the winners of The Century prizes for the best poem, story and essay by recent graduates of American colleges. Last year women graduates of eastern colleges won all the prizes. This year all three are won by westerners, the prize poet only being a woman. The most interesting art feature of the number is Cole's engraving from

Sir Thomas Lawrence's "Mrs. Siddons." Closing as it does, the magazine's fifty-eighth volume, this number contains the final instalments of several series such as Paul L. Ford's "Many-Sided Franklin" (which treats this month of the Politician and Diplomat), and Marion Crawford's "Via Crucis," and Prof. Wheeler's "Alexander the Great." A link between the old volume and the new is supplied by Capt. Joshua Slocum's four papers describing his unprecedented circumnavigation of the globe in a forty-foot sloop, of which he was "cook and captain, too," as well as mate and crew and steward. The second instalment, this month, takes the gallant skipper from Pernambuco, Brazil, to and half way through the Strait of Magellan, where he has a brush with the savages, whom he frightens off with a gun by day and carpet-tacks by night.

We have received the Blue Book, Textile Directory, edition of 1899-1900, and a perusal of its contents shows the great activity that has prevailed in textile lines in the United States in the last year. Many new mills have been built, numerous improvements and additions have been made, and others are in progress. The textile maps, which have become a valuable feature of this book, have been revised to date, all new towns in which textile mills are located having been added, and the towns where mills have gone out of business have been removed from the maps. In the cotton mills this year, there has generally been given the number of ring and mule spindles operated, instead of simply the total of spindles, as formerly. All the former features so well known in this work have been continued. The combinations, namely, the American Woolen Company, the American Felt Company, and the American Thread Company, as already perfected, which have absorbed a large number of textile mills, are fully described in the work. The Davison Publishing Company, 401 Broadway, New York. Price; office edition, \$3; traveler's edition, \$2.50.

### OILING FLY FRAME SPINDLES.\*

RUSSELL W. EATON, BRUNSWICK, M.E.

In presenting the subject of the oiling of fly frame spindles to this association, I attach more importance to it possibly than many other members because my experience at one time brought very forcibly to my attention one of the evils attending it. I refer to an occasion when I was called upon to locate the cause of certain stains in the goods. I do not doubt that a great many of the members are able to fix at once on the true cause of any oil stain that may appear in the cloth. I have only to say that in this particular case the cause had not been found. The particular stain to which I refer was in the filling. I adopted the rough method of ascribing the trouble to the weave-room and insisting that the overseer should stop it and should do so promptly. This brought from the overseer of weaving several cops with stains in them. Going to the overseer of mule spinning, and now reinforced by the stained cops as evidence of guilt, I made the same demand upon him. This brought from him the roving which was the cause of the trouble. We were now getting nearer. I had located the particular card-room which was doing the mischief. I will say that I was sincere in my first attempt to lay the blame on the weave room, as I had supposed that the stain was produced in an old steam box from the dripping. Having at last driven the trouble back to the carding department, I went over the matter with the overseer, and finally the trouble was located. The intermediate bobbins were very old—were all cracked and all oil soaked. I found that the oil worked through the cracks and stained the first layer of roving, where it touched the bobbin. This was not noticed. In

fact it could not be, as the stained part was always concealed. Throwing out nearly all the bobbins and putting new ones in their places was the next thing, and the oil stains were reduced until from five bales weekly of oil-stained goods, they **entirely disappeared**. I have thought that it might be interesting to some of the members to show samples of cloth containing stains of the character I mention. I have therefore taken bobbins and drawn a line of black oil on their surface so as to produce the same effect as that from cracked and oily bobbins. I have then had the roving made into filling and woven.

No. 1 contains filling which was stained on the slubber bobbin.

No. 2 contains filling stained on the intermediate bobbin.

No. 3 contains filling stained on the fly frame bobbin.

I have also prepared sample No. 4, in which the filling was stained in the cop by a streak in the side. An examination of these stains with the knowledge of their causes will enable a person to locate promptly the cause when the stain appears in the cloth room. I have had one occasion since when I was able promptly to locate the cause of the stain in the goods.

Not long ago a bobbin maker told me of a complaint that came to him of yarn being stained by oil from filling bobbins which he had just furnished a mill, and an examination of the work showed the trouble to be in the cracked bobbins in the card room. The occurrence, which I have narrated above, led me to take considerable interest in the subject of oiling fly frame spindles. I find several builders have self-oiling or magazine steps for the spindles. There is also the well-known Jackson method, which has many friends. The Lowell Machine Shop has an improved shape for the top of the spindle. All of these forms, however, like the common forms, require oil to be put on the spindle and on the bobbin gear. These parts must be oiled, of course, and in all cases oil is likely to fly out on to the rest of the machine, and the bobbins are sure to get more or less oil in them. There is, however, a method which was patented by Mr. Leander Shepard, and lately sold to the Saco & Pettee Machine Shops; which seems to do away with this trouble. The oil is in a magazine in the bolster tube, and oil's the spindle near the top of the tube. An opening filled with a fibrous substance also allows oil to pass to the bobbin gear. In addition to this, all the bolsters are connected by tubes and then with a central oil receptacle. In this way all the spindles and all the bobbin gears in a roving frame can be oiled from one point, namely, a receptacle located near the centre of the machine.

We have one slubber and one fly frame fitted with this arrangement that have been running successfully for nearly two years. I trust that the Saco & Pettee Machine Shop people will perfect the arrangement and present it to the manufacturing public.

### THE USE OF ANTISEPTIC SUBSTANCES IN SIZING TEXTILE THREADS.\*

Of the numerous organic antiseptic substances available, carbolic, cresylic and salicylic acid alone appear to possess properties that might render them useful to the sizer. They are all obtained from coal tar. By distillation carbolic and cresylic acids are liberated as an oily fluid, and from the crude carbolic acid of commerce. If further distilled a portion of this fluid will, at ordinary atmospheric temperatures, form needle-shaped crystals; another portion will remain fluid. The former is carbolic, the latter cresylic acid. Crude carbolic acid is a dark brown liquid that emits a strong odor. It is poisonous and much

\*A paper read before the N. E. Cotton Manufacturers' Association, Montreal.

\*From the Textile Recorder, Manchester, England.

adulterated with creosote—another preparation from coal tar. Although a more powerful antiseptic than zinc chloride, its smell and color have prevented its extensive use, otherwise it neither injures fibrous substances nor coloring matters. Salicylic acid is prepared from crystallized carbolic acid. When pure it is odorless, a most powerful antiseptic, and except for its high price, appears to be suitable for mixing with size.

Most size ingredients impart to the liquid a darker tone than of the yarn to which they have to be applied. This is generally minimized by the addition of a blue coloring matter, such as ultramarine or aniline. The best substance is that least affected by light, air, alkalis and acids. From this point of view the first named is superior to the last, it being fast to light, air and alkalis, but not to acids. Aniline, on the contrary, is often affected by light, alkalis and acids, yet it is in most extensive use, probably owing to its cheapness and purity.

In order to obtain pastes adapted to the work to be done, the sizer of necessity practices various methods of manipulation. These are determined by such considerations as the following: The nature of the yarn to be sized, for if two threads of a given count are spun, one from long, soft fibers, another from short, harsh fibers, similar size will not be equally effective on both; nor can hard and soft twisted threads be made to absorb equal quantities of a given size. It will be found that unless the density of the paste be reduced it will not permeate the hard yarn, and there will be a loss of weight as compared with the soft thread of ten per cent. and upward. The humidity of the atmosphere in a weaving shed must also be taken into account, for a size which in a moist atmosphere will adhere firmly to the yarn will in a dry one fall off. For which reason the same size mixing may, and often does, give different results if the warps are woven in different sheds, or if the atmospheric conditions are dissimilar in two sizing rooms. Other determining factors are: The count of the yarn to be sized, the weight of size to be added, the feel to be imparted to the fabric, and whether or no the fabric is intended to be used in the gray state, or has to be subjected to bleaching, dyeing or printing, or any combination of these processes.

At the commencement of the second half of the present century flour and water were frequently mixed in a tub and stirred once or twice each day with a wooden rod. To-day, however, if satisfactory results are to be looked for, a far more elaborate treatment is necessary and one that involves the use of a costly and suitable plant, a good room in which to conduct the operation, sound and suitable ingredients, and a skillful workman to bring them together. These changes have been brought about through increased productiveness of looms, through a demand for a greater weight of size to be put upon the warps, and in order to effect economies in the labor of handling such masses of size as are now needed.

The plant consists of wooden vats or becks, which vary in number and capacity to suit the needs of a manufacturer. They are oval, square and oblong in shape; some have internal dimensions of 3 x 3 x 3 feet or less; others of 21 x 5 x 5 feet or more. In vats where the length is more than twice the width a division is made in the center, but its upper edge is often from 2 to 4 inches lower than the other edges. Pipes connect one vat to its neighbors and finally to the size box of the sizing machine. A force pump is also attached to each to automatically transfer the contents of one to another. Every vat is provided with one, two or three sets of dashers or agitators, each consisting of a vertical shaft upon which an upper and a lower pair of arms are secured to support a series of blades. The shafts turn in footsteps situated at the bottom and in cannon bearings at the top of the becks. Their motion is derived from bevel wheels, one of which is made fast upon the top of each shaft, and similar wheels are fitted upon a horizontal shaft whose bearings

are elevated above the becks. This shaft is placed lengthwise, and in line with the beck centers, and is driven by a belt from a line shaft. Where two or three agitators are required for one beck, the arms of one are set one-quarter of a revolution in advance of those preceding, for by this means the outer edge of one blade will almost touch the shaft of another agitator, and when the blades are at work it will be impossible to leave any considerable volume of size stagnant. A cylindrical or an oval copper pan, or a wooden boiling beck, is furnished with a cover and a chimney to carry away steam. The pan is usually placed above the two last becks, and from its base a pipe is led to each of them. Both these pipes can be opened at pleasure by taps, hence the contents of a pan can be readily transferred to either beck; it is also fitted with one or two sets of cast-iron agitators. In every vat where heat is required, a forked copper pipe is laid along the bottom, each prong being almost equal in length to the vat. The entire length of this pipe is perforated with small holes, and another pipe, communicating with the boilers, is attached to admit high pressure steam, and so raise the contents of the vat to the boiling temperature. The vats may be defined as: (1) Steeping or flour-mixing vats; (2) ageing, mellowing or storing vats; (3) boiling pan, for the separate ingredients; (4) size mixing and boiling vats, for the combined ingredients; (5) using vats.

It will be seen from the following that sizers use the vats in different ways. A mixture of flour and water may be prepared by admitting a volume of cold distilled water into the first vat to be used. Such water is usually collected from the condensers of the sizing machines, the weight of water and flour being equal; or there may be ten-parts of water to eleven parts of flour by weight; these proportions will produce a mixture having a high specific gravity, and one in which most of the starch will be kept in suspension. The dashers are put in motion, and, if the mixing is to be a large one, a crane, or a Weston pulley block, is in close proximity to the vat; it is employed to lift a sack of flour, with the mouth tied, but downwards; when over the vat the tie is removed and the flour slowly emptied into the agitated water and thoroughly mixed. Other sacks are similarly treated, but at intervals of one, one and a half, or two hours. When most of the flour has been mixed with the water the remainder is added in smaller quantities and at longer intervals. During mixing the mass greatly increases in bulk, its specific gravity is proportionately reduced, and a copious frothing takes place. Unless the vat is large the head will run over into the next compartment; this, however, should be avoided, as that compartment may contain size. The froth is due to fermentation, which disintegrates the flour and renders the gluten less adhesive. The length of time during which flour should be subjected to this treatment depends upon the intensity of the fermentative action, and the latter is influenced by the quality of the flour and water, the condition of the beck and the temperature. It is unfortunate that this operation cannot be conducted under conditions which would leave the result less uncertain. Sizers steep the flour from one to three, or even six, days, at a temperature of not less than 70° F. and not more than 80° F. It is customary to leave the flour and water until the froth has subsided, then to remove the greenish-brown scum from the surface, and, by setting the required pump in action, transfer the contents to vat number two; where water is added until the mixture Twaddells 28° to 36°. It is there left for from three to six weeks to further ferment; it has been left for from five to six months, but since steel rollers replaced grinding stones flour has been received in a finer condition, and the shorter time is often sufficient. It should, however, be governed by the percentage of gluten contained in the flour; the higher that percentage the longer the time needed.

During fermentation it is advisable to keep the agitators

slowly-moving-throughout each working day, as a thorough admixture of the mass produces changes more rapidly and uniformly. While in this beek the starchy matter settles every nig it, and some sizers siphon off the impure water from the top, and replace it by an equal quantity of pure water. This operation is called washing, and is repeated several times, until little but starch remains. That the practice is a wasteful one will be shown later.

**LUSTERING COTTONS.**

Knoop states that though the Thomas & Prevost method has been successful in imparting a silky appearance to cotton yarns, it is not so with regard to fabrics, and the other improved methods to overcome this defect produce merely imperfect results, while at the same time exhibiting fresh disadvantages. As a simple and cheap solution of this difficulty he recommends the following process, which without rendering cotton equal in brilliancy to silk, increases its luster considerably. The fabric is treated with a 20° Be. solution of caustic soda on the jigger, with or without the addition of some fatty substance (such as turkey-red oil or glycerine), the bath being heated to between 100 to 122° F. On leaving the jigger the stuff is immediately transferred to a drying cylinder, which should be situated as near as possible, in order to reduce to a minimum the exposure of the material to the air—a few seconds at most. When the fabric comes out of the drying cylinder it will be very hard and brittle and require care in handling. It is then entered into a bath of dilute (3 to 4° Be.) sulphuric acid, and is afterwards thoroughly washed and dried. A slight chloring is given to reduce the yellow tinge of the goods. A fabric treated in this manner will shrink but slightly, acquiring on the other hand both flexibility and thickness. When draped in large folds and viewed a little way off, beautiful silky effects are observed. The quality of the fabric plays a great part in the success of the method, a good satinete giving excellent results. Mercerization should and can be entirely avoided; if the treatment is properly carried out the affinity for dyes is diminished, says a writer in the Revue Matieras Colorantes.

**TEXTILE IMPORTS FROM GREAT BRITAIN.**

The following are the sterling values of the imports from Great Britain, of interest to the textile trades for month of August and the eight months ending August 1898-1899.

	Month of August.		Eight months ending August.	
	1898.	1899.	1898.	1899
Wool.....	£ 3,120	£ 2,852	£27,394	£13,361
Cotton piece-goods .....	41,944	48,804	325,457	371,523
Jute piece goods.....	8,306	7,867	87,403	80,325
Linen piece-goods .	16,574	15,801	102,402	121,567
Silk lace.....	354	1,080	5,348	10,912
" articles partly of.....	4,120	9,952	21,797	35,938
Woolen fabrics .....	54,057	47,318	216,453	227,064
Worsted fabrics.....	58,203	62,226	422,977	399,842
Carpets .....	21,310	20,175	131,191	134,480
Apparel and slops .....	35,347	27,826	197,076	152,185
Haberdashery .....	13,767	23,714	103,914	114,515
Writing-paper, &c .....	3,278	2,107	16,222	17,805
Other paper .....	743	581	4,999	5,442

The reported amalgamation of the Ontario knitting mills under the auspices of the Penman Mufg. Co., has no basis in fact. The directors most concerned in the company inform us that no steps whatever looking to that end have been taken or are in contemplation.

**Textile Design**

**LIGHT-WEIGHT COTTON WORSTED.**

Yarns dyed in skein. Finished weight from 13 to 13½ ounces for 56-inch width.

Dressed—3,600 ends 6.4 width, figured as 2-30s worsted or 2-20s cotton.

Woven—52 picks 10 inch.

Cassimere twill, weaving either straight or cross drawn. Reeded 64 inches inside selvage, equals 66 inches over all. If drawn straight on eight harnesses; if cross, harness as pattern requires.



Twill to right in weaving.

3,600-ends warp, as either 2-20s cotton or 2-30s worsted equal ..... 7.61 oz.  
62-picks filled as either 2-20s cotton or 2-30s worsted equal ..... 7.26

Estimated weight 6.4 yard from loom.....14.87 oz.  
7.44 oz. 1-15 worsted shrinkage .11 p.c. equal..... 8.36  
7.43 oz. 1-10 cotton shrinkage .10 p.c., equal..... 8.25

Amount yarn necessary for 1-6.4 yard equal.....16.61 oz.  
8.36 oz. 1-15 worsted at 65c. per lb., equal.....34c.  
8.25 oz. 1-10 cotton at 10c. per lb., equal..... 5.1c.

Total cost yarn for 1-6.4 yard equal.....39.1c.  
Total cost manufactured for 1-6.4 yard equal.....40c.

Total cost at mill for 1-6.4 yard equal.....79c.

The above fabric is novel in construction, being a cotton and worsted twisted together, so when examining for texture no thread appears as cotton. Have arranged the sizes of yarns so that the same weight of each appears in cloth. You have really a cotton worsted, one-half cotton, but in the handle of which a good judge will be deceived. These yarns, both cotton and worsted, should be dyed in the single, and twisted after coloring, an easy matter, as the worsted is 1-15s and cotton 1-10; in neither instance fine enough to cause trouble in dyeing. Again, it costs no more to make fancy double and twist this way than solid colors (if twisted after dyeing), and by so doing many nice effects can be produced in double and twist yarns. The manufacturing costs high for number of picks per inch, as the coloring, winding and twisting are more expensive this way than the more common method of using both cotton and worsted, solid thread each.—A. R. W. & C.

**DYED COTTON YARNS.**

Dyed cotton yarns which are dressed for weaving, that is, warp yarns, change more or less in color, which evidently depends upon the dyestuffs with which they have been dyed, and on the other hand upon the composition of the dressing. There exist dressing methods which prescribe an addition of alum or of bluestone to the dressing mass without regard to the color in which the yarn has been dyed, and whether these additions alter the color or not. If it is an uncontestable fact that neutral dressings are liable to more or less alter certain colors, how much more must not a dressing influence the colors which contain these chemicals. Take, for instance, the fashionable shades of gray for covert material. Every dyer who has to dye such colors knows, that in this case the whole manipulation must be

extremely accurate and exact, especially when the object is to obtain a perfect match to a given sample. The dyer is mostly very glad to have the whole thing exact and to have succeeded in actually producing such a perfect match, and it is exceedingly annoying for him to see how these colors are then spoiled by an arbitrary and injudicious addition of such substances to the dressing. Although there are to-day artificial direct dyeing dyestuffs wherewith such colors can be dyed, and with which such additions to the dressing have no influence upon the color, I believe, says a writer in *The Deutsche Farber Zeitung*, that a large proportion of these grays is still produced with fustic, Brazil and iron. If now a gray that has been dyed with histic, etc., is dressed with a neutral dressing, it will be found after the yarns have been dried, that the color has become a little lighter and more yellow. The color, must, therefore, from the beginning be made a little grayer than the sample. But a very different result is obtained when the color is treated with a dressing which contains alum or bluestone. If the former, the color turns to a much greater degree lighter and yellower, while with the latter the color becomes duller and redder. But in both cases the tone of the color is after dressing such that does absolutely not match with the given sample. Again, if a yarn which has been dyed with paranitranilin, nitrosamine, azophorred or nitrazol, is dressed with a dressing which is mixed with bluestone, a turbidity of the color will unavoidably be produced and that to a greater extent the hotter the dressing is applied. As is evident from the foregoing, it would be desirable that parties who do not know the effect of such additions would keep hands off, and leave to the dyer the composition of the dressing. It may happen in certain cases, that one or the other addition to the dressing is indispensable: if, for instance, a mode gray has turned out too dark in dyeing, an addition of alum does good service and becomes even necessary if the dyeing operation has been ended with the treatment upon a separate bath containing alum. An addition of bluestone is recommendable, when a gray that was dyed with fustic and Brazil, is after drying found to be a shade or two too yellow; then a redder tone is obtained with such addition. In all cases, however, such additions must not be made by guessing, but only after ascertaining by experiment, how much of one or the other may be safely applied.

#### WHAT MUST BE DONE TO SPIN FINE YARN ON A FILLING FRAME \*

ARTHUR H. GULLIVER, ASHTON, K.I.

There is no question that filling yarn requires more careful attention than warp. It is more easily affected by atmospheric changes and by variations in the length of the staple. It is a final process, and has not the spooling and warping where it is possible to discover poor work before it is put into the loom. It cannot be handled under unfavorable conditions, as well as on the mule, as there is no opportunity to vary the strain on the yarn with the ease that it can be done with the fallers and the winding motion on the latter machine. This fact is recognized in the desire to obtain the best ring spinners available by paying more per side on the filling than on the warp frames and thus using a more economical class of help.

In fact the continued increase in the demand for frame spinners will make it advisable to pay even more per side to secure a permanent class of hands, that will take a personal interest in their work, and ensure better quality and larger product. If such operatives are employed a better grade of work can be expected and demanded than from the average run of spinners in the mills.

This care must be given in the whole supervision of the room from the overseer to the doffer. It would almost seem as if it should be stated the other way, as the doffer is a very important factor in the running of the filling in the loom. It is absolutely necessary that he should start the yarn on the bobbin, so that it will weave off clean on the loom. The finer the yarn, the more important his work, as the strength of the yarn will not allow any extra strain. The bobbin next claims attention, it must be kept exactly right for the spindle. If it needs reaming on the top or the base, it should be done at once, so that it will be kept in place. As the filling frame requires straight dosing, more or less waste will collect in the bobbin, this must be kept cleaned out so that the bobbins will stand in line, each in its proper place on the spindle.

Have the bobbins made as large on the top as it will pay to run, make the size three-quarters of an inch rather than five-eighths; and, after leaving coarse yarns, it is not economy to use half-inch, and even on these the larger size is preferable. If it is necessary to spin a finer number than the one that is running on the frames, use the bobbin larger on top with the requisite taper, and it can be done as well or better than by changing the ring. This is a very important point in spinning fine filling with success, as the strain on the yarn is always on the small part of the bobbin. It is better to have ridges, rather than grooves, not only on account of making the bobbin stronger, but also to give the larger diameter to relieve the strain on the yarn in spinning. In using this style of bobbin, there is a tendency for the yarn to slip over the ridge if the wave comes up to one at the end of the traverse, but the thread can be bound in place by running up slowly and using the quicker part of the cam on the downward course of the traverse. A short cone is better than a long one with lifts of medium height, cut hooking, so that the yarn will not slip off, and a groove cut on the bobbin between the cone and the base will make a better bobbin for weaving. The long cone decreases the length of the yarn that can be put on the bobbin and requires more stoppage, as the frame will require to be doffed oftener. The ring should not be larger than  $1\frac{3}{8}$  inches up to number 55 yarn, from this up to 70,  $1\frac{1}{4}$  inches, and for finer numbers  $1\frac{1}{8}$  inches. In making a choice between two sizes of rings, should give the preference to the smaller, as not a few of the difficulties in spinning fine numbers can be overcome by the use of the smaller ring. It goes without saying that a good ring is required, one that is round, and it will be worth while to try them all and reject those that are not up to the standard.

The traveler should be as light as possible without making too soft a bobbin, and still heavy enough to keep the thread from ballooning so much as to require a separator. The latter should not be used if it can possibly be avoided, as it catches a good deal of waste and adds more or less of it to the yarn, even with the best care in keeping it properly brushed. It also interferes with the proper examination of the bobbins on the frame, to see that they are all at the same height and in the proper place on the spindle. The traveler must be made with the right flange for the ring used, and as small a circle as will go on the ring without undue breakage, and it is best to use the round point traveler.

The spindle speed should be low rather than high, as frame spindles are now run. On 60 yarn 7,800 to 8,000 turns is a satisfactory speed, and from that to 8,500 on 36 yarn, but even on this a slower speed will not be a mistake, as less speed means less breakage and less twist. The matter of twist is one that gives the most trouble, as on carded stock there must be more than the standard mule twist. It will need from one and a half to two and a half turns more on average cotton. How much only the running of the spinning will determine,

\*A paper read before the N. E. Cotton Manufacturers' Association, Montreal.



as it must run well; there is no economy in running so that the quality will not be the best. On combed stock there is no question that the twist can be less than standard, and on numbers finer than 65 it will be economy to use this preparation.

The draft should not be too long,  $1\frac{3}{4}$  on 36 yarn will have to be decreased on number 42 to make the work as good, and the yarn as satisfactory. As the yarn becomes finer, the draft should be gradually made less, until a draft of ten and one-half is reached for 60 yarn. If it is possible to make finer roving than this requires with the carding machinery, and still use double roving, it will improve the spinning. In spinning any number it is necessary to use double roving, as the work will not be satisfactory without it. One word more about double roving, a number of mills needing more filling yarn alter a warp frame to the filling wind, still using the single roving, but the results are not the best, and not a little of the fault found with goods made from frame filling, and the making of this filling itself, comes from just this method of spinning filling yarn. Filling yarn will need less twist with a shorter draft, and if possible to make this choice, should give the preference to one tooth less draft rather than one more tooth of twist, and the spinning will show more improvement.

The best conditions can be obtained in a room where the humidity runs from 55 to 65 per cent, and the temperature can be kept low in the extreme warm weather. This would make it advisable not to put the frames on the upper floor under the roof, but on a floor below, leaving the upper by choice for the warp yarn.

The frame should be made with short boss rolls, the stands pitched to insure the twist running up to the bite of the rolls, the saddles set so as to leave the middle roll without weight, the thread guides round rather than flattened on one side, and provided with a kink arrester. There should be a traveler cleaner, and the roving trumpets should be made with as small a hole as possible. There should be plenty of space between the thread board and the top of the bobbin, and the choice should always be given to a wider rather than a narrower gauge of frame.

There will be no doubt that it is economy to select as good staple as possible for the filling yarn in mixing the cotton, as less twist is to be the goal always sought, the quality of the stock and the evenness of the staple are important considerations. A bobbin filled with yarn spun well will mean good weaving, large production and a medium amount of waste which should not be any more on twelve bobbins than is usually made by the weaver in putting one cop in the shuttle. Without question, the best method of setting the twist is to keep a surplus stock of bobbins, from four days to a week's supply, ahead of the looms, and have the filling kept in a damp cellar or on a rack over running water. If this cannot be done, air moistened with water should be blown or sucked through the boxes of filling in enclosed bins. During the cold, dry weather, it will be advisable to heat the water from the returns from traps on the circulation pipes or from the slashers.

There has been a great increase in the spinning of frame filling within the last few years, and first one mill and then another makes finer and finer yarn. There seems to be no question up to number 80, and the results on numbers finer than 100 seem to be very satisfactory. The saving in cost of production is not the same in every case, but half a cent per pound ought to be possible on the finer numbers of yarn. This with the large saving in cop waste, the most expensive waste made in a mill, makes a strong argument for the frame and the change from mule yarn to frame yarn would seem to be a move in the right direction.

## Foreign Textile Centres

MANCHESTER.—In the lace departments more vigor has been shown lately, and agents, both for home and foreign manufacturers, appear to regard the outlook as good. Cluny lace manufacturers have made wonderful efforts, and have succeeded in bringing out some distinctly attractive designs. Embroidered hats and all-overs, the latter on silk embroidered muslin, have been well sold by Plauen agents, especially to some of the foreign markets, and black silk laces have also met with fair enquiry. Lace bed sets, which were well bought for shipment a few seasons ago, appear to have done badly. No reference to hosiery would be complete that did not speak of the mercerized effects that have been brought out of late in stripes and other styles. Some of the finest novelties shown are in goods of this class, and the continent has not been slow to take up the business. Lace hosiery has received much closer attention. In striped hosiery gray grounds with fine stripes up have been fairly prominent. Blues and purples have met with support in foreign dyed goods, although it would be difficult to express an opinion as to the probable length of their reign. Combinations of mercerized cotton and merino for hosiery stripes produced a tasteful effect, and sprigs, polka dots, and other designs embroidered with mercerized cotton look very well, says *The Drapers' Record*. In the dress goods departments the outlook appears as satisfactory as in other branches. The abundance of employment in the great trades of the North makes a brisk retail movement certain, and every department of the wholesale trade will share in this prosperity. Printed silks do not seem to have such a run in this country as in some of the foreign markets, but Continental producers have paid close attention to these goods, and are showing a beautiful range of designs. In the heavier branches the feeling as far as linens are concerned is that prices will keep firm. Cuba continues to buy liberally, and the mills are so busy that manufacturers have no inducement to listen to buyers desirous of beating prices down. In fact, in some of the linen-producing districts labor is somewhat scarce. Most of the cloths going to Cuba are for clothing purposes, being, as a rule, of a medium or inferior grade, although some finer grades are sent. The demand, at any rate, has helped to considerably improve the general tone of the linen industry, and the outlook is more cheerful for the manufacturer to-day than it has been for a long time, while the distributor, as far as can be gathered here, can look forward with confidence to the results of his autumn trading. The prospects all round certainly appear satisfactory.

BRADFORD.—That part of the year 1899 which has already passed has been in the highest degree eventful for the Bradford trade, and the present commercial situation is also distinctly removed from the commonplace, says the correspondent of *The Drapers' Record*, London. During the year we have seen the establishment of a successful combination of such importance that it practically controls one of the most important branches of the Bradford trade, and other less important combinations are also taking possession of other departments of the local industry. It is impossible to foretell what the eventual effect of the establishment of these trade combinations may be, but it is certain that they must have a far-reaching effect on the Bradford trade generally, and that a full test cannot be given to them until they have successfully stood the strain of a long period of trade depression. We have also seen an almost unprecedented revival in the general trade of this country, coupled with one of the finest summers and most successful harvests in modern years. As this prosperity has extended to all our principal national customers, including the United States, every factor necessary for a good autumn business seems to be present,



though this bright outlook is, to some extent, interfered with by the disturbed state of South Africa. The fact that to-day the prices of fine merino wool and tops are higher than they have been for ten years past is naturally causing consumers to hesitate and ask to what extent these high prices will cause other wools to supplant these fine colonial wools, and the upward tendency of prices to be checked. At present in this market there is not the slightest sign of any declension in the values of merino, but each market day sees the price gradually creeping upward. The fact that a distinct improvement has set in both in the demand and price of the lower and cheaper kinds of crossbred colonial wool is really of more importance than the more sensational advance in pure merino wools, as by far the greater portion of the world's production of these crossbred wools is dealt with by the combing machines of Bradford. English down wools, which are very similar in character to some colonial crossbred wools, are no less than 3d. per lb. up in the last three months, and English pure lustre wool is also in specially good demand. As might be expected when bright dress goods are in such high favor, the quotations for both raw mohair and alpaca are extremely firm at the considerable advance already established. Worsted spinners of all kinds are now extremely busy, and the trade has become so healthy that it is quite possible for a spinner to get orders which enable him to cover with raw material the same day at a price which left quite a satisfactory margin of profit, and a business of the above kind has for long past been impossible. The autumn season's orders were largely placed before any great advance in the prices of raw material had taken effect, and, therefore, makers would not be able to undertake repeat orders for fine winter dress goods at anything like the rates at which they took the original orders. Makers of coating costume cloths sold either the same or very similar cloths for winter, in a slightly darker range of shades, as they had sold for summer, and there has, of course, been no trouble in getting buyers to accept deliveries of these goods this year. The demand for high-class black fancy dress goods has, up to the present, been hardly equal to last year as far as the home trade is concerned, as the tendency of fashion in the direction of wearing more tightly fitting skirts has made some of the very raised crepon effects to some extent unsuitable. Bradford makers are now, however, producing novelties in fancy black dress goods which are more suited to these closely fitting styles, and these are being exceedingly well received in the trade, and there is no doubt that the wear will be far more satisfactory. For the United States the mohair blister crepons have, however, quite retained their hold in the affections of lady dress wearers up to the present time. Whether on account of the extremely high price of fine wools, or because fashion is ever demanding change, it is hard to say, but there is no doubt that quite recently there have been extremely strong indications that amongst the leaders of fashion Scotch tweeds were coming rapidly into favor as dress materials. No account, however short, of the autumn season's trade, would be at all complete without mention of the immense development of the trade in mercerized cotton goods, in which department of the trade the Bradford district dyers have been easily first. As the high-class foreign made fine soft cloths for costume purposes have been to some extent discarded on account of the great rise in prices, there has occurred a great opportunity for Morley and those parts of the Leeds district where light cheap wooleens are produced, and this opportunity has been taken full advantage of, as to-day these makers are extremely busy on some slightly fabrics at moderate prices.

**BELFAST.**—This linen market fully maintains its position, the demand gradually expanding at full rates. The spinning branch is unchanged, producers still declining to do more than a sorting-up trade; prices are exceedingly stiff for wefts, and

hardening for warp yarns. The manufacturing end is brisk; stocks are very small or else non-existent, and current buying is fully equal to production, says The Textile Mercury. White goods for local and cross-Channel consumption have met with a freer sale, and some very respectable orders are coming forward; prices are steadily hardening. The States are the turn better, and Cuba keeps active. The Continental demand tends to expand regularly.

**ROCHDALE.**—At the flannel market recently new orders were rather limited. Still, they are more than sufficient with what manufacturers have in hand to keep works busy. Much interest is centered in the London wool sales, and some manufacturers back their views by indifference towards fresh business at current values.

**KIRKCALDY.**—In the weaving industry machinery is fully employed, while linoleum and floorcloth manufacturers are doing a large and increasing business, and prospects as regards both industries are good.

**KIDDERMINSTER.**—Not much can be said of the carpet trade any more than that travelers are now starting on their journeys to open the season, and that the wholesale and shipping orders already received are fully satisfactory in quantity if not in price. The yarn trade generally is certainly better. Wool is stiffer, and spinners have more to do; consequently much business is declined at old prices. The movement in carpet yarns is slow, but, without any established advance, such yarns cannot now be bought so well as they could a week or so ago.

**LEEDS.**—Business done by cloth manufacturers on Tuesday was not of much importance, as so many had gone to the opening of the wool sales. There is, however, an abundance of orders to go on with, and deliveries are proceeding uninterruptedly both to the home trade and shippers. Rough-faced cloths do not go off so well for winter overcoatings as they did, and this branch is about the only one which is slack. Meltons, to a great extent, are taking their place, and makers are engaged on unusually large orders at a little advance on former prices. There is also more activity among mantle cloth makers, but all are not doing equally well. Dyers and finishers are brisk operators in woolen cloth, and mills seldom had fuller or better paid employment than now, writes the correspondent of The Textile Mercury.

**NOTTINGHAM.**—There has been a steady demand for yarns, but orders are sparingly placed, as buyers are less willing to pay full quotations. Fine yarns for nets are selling in good quantities, and the sales of yarns for curtains and heavy nets are fully up to the average. There is a steady demand for merino and cashmere yarns, for which the highest quotations are adhered to. There is no change in the bobbin net trade. Goods are scarce and prices are high. Business in the fancy lace warehouses is rather languid.

**LEICESTER.**—The hosiery trade is brisker all round, with larger deliveries of heavy fabrics, while prices have a decidedly upward tendency. The yarn market is very healthy and active in all departments, and the whole of the output is absorbed as fast as it is produced at very firm prices.

**LYONS.**—The general tone of the Lyons raw silk market at last mail advices was one of weakness, says the Dry Goods Economist, New York, while prices did not show any actual decline there was less buying, and weaker Asiatic markets influenced the local situation. As buyers have not been active with their demand, sellers, who had become accustomed to have everything their own way, have become more tractable. Japan silk could be obtained at lower prices than had been asked previously, and in Levant and European sorts also sellers did not insist on full figures. Some buyers have profited by this period of rest to make some purchases, but a more general demand would

have had the effect of making prices strong again. China silk is also a little easier owing to heavy arrivals and to the fact that the facilities for throwing it are not sufficient, and the supply is becoming greater than the outlet. French Cevennes are firm on the basis of 58 to 59 francs, for extra Cevennes 10-12, 11-13, and on this basis some lots have changed hands. The goods market is not sufficiently active to encourage holders of raw material. While manufacturers are doing something and are booking some orders, the power looms being well provided with orders, the question of prices still interferes with regular business. As long as buyers keep on fighting the new prices of fabrics, manufacturers will feel conservative in regard to their purchases of raw material. Italian silk is in fair movement and is closely followed by Broussa and Syria sorts. Stocks of Broussa silk are not increasing, notwithstanding the relatively heavy arrivals. This is due to the contracts for future delivery that had been previously made and against which the silk has to be delivered. This makes holders of Broussa silk firm and leaves them uninfluenced by changes in other grades. The cocoon market is quiet. In Marseilles cocoon prices are lower and holders are no longer asking unreasonable figures. Good yellow cocoons are obtainable in Marseilles at 12 francs per kilo. Canton and China trams have been in good movement.

MILAN.—Activity is not the prevailing feature of the raw silk market, the demand having been moderate. Under other circumstances this would have resulted in a decline in prices, but the confidence of holders seems to be so firmly established that even protracted quietness cannot shake it. Of course the excessive figures demanded, but not always secured when business was active, are out of the question, but the undercurrent of values is strong and there are few weak spots. In raws the demand, while small, is well distributed and embraces all grades. In thrown silks a good order business has already been done for export and nearly all the throwing spindles are under orders for tram and organzine for some months to come for deliveries here and on the Continent. Little business has been done for America, American buyers being for the present more interested in Japan silk, which is relatively cheaper. In Asiatic silk there is no change and in this market the demand is moderate at unaltered prices. A fair business has been done in Canton silk. The Turin market is firm and holders there show no sign of weakness and insist on full figures. Transactions are, however, interfered with by a difference in the views of buyers and sellers of from 1 to 1½ lire per kilo. Cocoons are also firm and some lots have found a market at 13½ lire per kilo, which is the highest price registered this season for actual transactions.

ZURICH.—The condition of the market for silk goods is not a satisfactory one. It seems to be no longer the fault of the higher prices if business is small. Even at low figures there are few buyers, and Paris as well as London seems to have few requirements. The manufacturer is confronted on the one side by the absence or smallness of buyers' requirements and on the other by the steadily advancing raw silk market. They cannot produce any more goods on their own account, especially at present prices for raw material. The orders that had to be filled have almost been completed, and there is little to take their place. A fair demand exists for plain goods in black and colors, taffeta, satin duchesse, satin de Lyon, etc. Stocks are, however, not being much reduced, and the looms add to them every day. The demand for raw silk in the local market is small. Prices of Italian silk are firm, while those of Japan and China sorts are slightly weaker.

CRNEFELD.—The situation of the silk fabric market is unchanged, and manufacturers still complain that they are not booking as many orders as desirable. Spring business has not yet developed sufficiently to compensate for the lack of new

orders for fall, which have been interfered with by the lateness of the warm weather that has interfered with fall consumption. This interference is likely to affect business and make it less satisfactory as far as manufacturers are concerned. Having less time in which to dispose of their goods buyers are likely to reassort more moderately for fall than they would otherwise have done. Fall business for home consumption is fair, but rainy weather has to some extent interfered with it. Buyers are not unwilling to purchase, but will only do so at unchanged prices, and it seems out of the question to raise prices on fall goods. The favor which velvet is finding for millinery trade, for dress trimmings and for waists threatens to seriously interfere with the demand for silks this season. For this reason fancies in silk receive little attention, and are pushed aside by fancies in velvet which are the better favored. But velvet has interfered also with the consumption of plain silks. As far as the general industry of the district is affected, it makes little difference if silk tissues or pile fabrics have the upper hand, as the industry of the district can produce both and no trade is lost. But individual firms who are devoted to the production of the one or the other exclusively feel the difference. The other branches of the silk industry are fairly employed. Ribbons have been very slow. In tie silks orders could be better, but some firms are fully engaged. In umbrella silks production is good. Lining silks for the garment trade have been active, but the demand is commencing to slacken. Fancy linings have been prepared for spring, and would seem to have the preference, in fine stripes on satins and on additional figure effect. For lining purposes garment makers seem to be also partial to changeable effects. The velvet and plush industry have little to complain about, and the looms are fully engaged. Velour du Nord is a favorite material for cloaks and finds a good market.

### FIRE-PROOFING OF FABRICS.

The subject of rendering textile fabrics proof against fire is not new, but recently it has begun to attract the attention of dyers and bleachers in a way that is marvelous, for, with very few exceptions the practical mill man has not touched this subject. No doubt the energy is due on their part, remarks The Textile Colorist, to the number of more or less disastrous fires that have occurred in hotels and private residences that might not have been, had the hangings and draperies been treated with one of the several processes that materially reduce the inflammability of fabrics.

The processes of fire-proofing have given us fabrics that could be divided into two main groups, one, those fabrics which are inflammable, and those which are of slow combustion. The former fabrics are, as a rule, so charged with chemical salts that flaming of the fabrics was out of the question, but there was a counter evil in their having minute crystals of the fireproofing agent distributed over it, and which, upon being shaken or blown by the wind, as in the case of lace curtains at a window, loosened these fine crystals, which were distributed throughout the atmosphere of the room. The slow-burning fabrics are also treated with chemical salts, but the slowness of combustion is due to the presence of moisture held chemically by the substances, and which cannot be expelled except by a higher and more protracted heat than usually occurs in the first minute or two of a certain fire. The most popular series of chemical salts that can be made use of in experiments on fire-proofing are the phosphates of the alkalies, all of which are white or colorless, and which cannot be expelled by ordinary heat. Phosphate of ammonia is the favorite, while phosphite of sodium comes next in popularity, forming, when combined with sodium chloride, and perhaps a small quantity of sal ammoniac, a mixture that

can be dried on the goods after they are bleached and ready for hanging. Such treatment of fibers is not quite possible to the manufacturer or storekeeper, but is of estimable value to the laundryman or housekeeper who supervises her own washing, as they can add the mixture to the final rinse water and dry them, when they are ready to resist fire. There are very few colors that this mixture will affect, and as a consequence it can be applied freely, but there are many fabrics to which it cannot be applied because of the undesirability of the presence of the salts in the goods, such as personal wearing apparel.

### TEXTILE PUBLICATIONS.

In order to accommodate readers of *The Canadian Journal of Fabrics*, the publishers will be pleased to mail any book in the following list on receipt of the publisher's price, duty free. Books on technical and practical subjects, not in this list, can be obtained and mailed at publisher's prices. In ordering, please give full address, written plainly:

Worrall's Directory of Cotton Spinners, Manufacturers, Dyers, Calico-printers and Bleachers of Lancashire, giving the mills of the British cotton district, with number of looms and spindles, products of the mills, cable addresses, etc .....	\$2 00
Worrall's Directory of the Textile Trades of Yorkshire, comprising the woolen, worsted, cotton, silk, linen, hemp, carpet, and all other textile mills, giving looms and spindles, and the various lines of goods manufactured, etc .....	2 00
Worrall's Textile Directory of the Manufacturing Districts of Ireland, Scotland, Wales, and the counties of Chester, Derby, Gloucester, Leicester, Nottingham, Worcester, and other centres not included in preceding works, with capacity, products of mills, cable addresses	2 00
The Wool Carder's Vade-Mecum, by Bramwell; third edition, revised and enlarged; illustrated; 12mo.....	2 50
Technology of Textile Design, by Posselt.....	5 00
The Dyeing of Textile Fabrics, by Hummel.....	2 00
Textile Calculations; very complete; by E. A. Posselt....	2 00

### THE INFLUENCE OF FULLING, WASHING AND SPONGING UPON COLORS.

As regards fulling, writes John Kappes in *Deutsche Faerber Zeitung*, it is self-evident that the alkali of the soap as well as the soda can strongly influence the colors, and, as is known, the colors are divided into such as are fulling fast and such as are not. The colors which are not fast to fulling pale away, i.e., leave the fiber or, as it is called, "bleed." The bleeding acts as a hindrance upon the fulling process, as the detached dyestuff decomposes the soap and mostly insoluble color lakes are formed. Many colors are thereby altered in shade or tone, particularly the wood colors, unless skilfully dyed. If, for instance, wood blue from logwood, alum, tartar and bluestone is dyed too acid, it becomes in fulling completely dead and dull. Even perfectly fulling fast colors are by the alkali altered in their tone, as, for instance, cochineal. Upon the behavior of several artificial aniline and alizarine dyestuffs in fulling we cannot dwell here in detail. Another trouble arises if light colors or whites are fulling together with dark colors, when the so-called smutting off occurs, that is, that minimal quantities of dyestuffs fix themselves upon the light-colored yarns; even the dyestuffs which are considered fastest to fulling give rise to this trouble. In such cases it is recommendable to either hang the goods in the sulphuring chamber or to treat them with aqueous sulphurous acid; sometimes a

mere acidification with sulphuric acid answers the purpose. A good plan is also the following, viz.: Wash the pieces in a bath of permanganate of potash (so much permanganate that the bath is colored rose) for about half an hour, rinse in clear water, and treat them upon a bath of sulphurous acid to which very little blue is added; if the white should still be dirty wash with fuller's earth.

Every fuller knows that different colors have a different influence upon the fulling capacity of the goods. It is generally known that dyed wool is more difficult to full in than undyed wool; it can even be asserted that the longer protracted the dyeing process has been the more has the wool lost in felting property. As is known, the dyeing of ordinary acid dyestuffs requires one hour, with wood dyestuffs after the one-bath method 2 to 2½ hours, with mordant dyestuffs, inclusive of the mordanting boil, 3 to 5 hours; the differences in the fulling capacity of these colors is, therefore, easy to comprehend; but even within the limits of the same dyeing method many differences are noted. Thus, for instance, the blue colors full more difficultly than the greenish, etc. The most differences, however, occur with black. Chromium black presents the property that the wool dyed with it behaves very well in spinning and shows a strength which is greater than that of the raw wool; such goods, however, are more difficult to full than such as have been dyed black after other dyeing processes. With sumac black the case is the reverse, the spinning property is decreased and the felting capacity increased. Analogous is in general the behavior of the chromium dyes on the one hand and the tannin dyes on the other. The colors dyed upon alum mordant behave, although to a less degree, like the chromium mordanted ones, somewhat difficult in fulling. Among the artificial dyestuffs, diamond black is known to possess, besides its fastness, the good property to preserve the felting capacity. That which is true of fulling applies also, though to a less extent, to washing; but here, too, occur special cases which may be considered. As is known, spirits of sal ammoniac is frequently employed for washing the soap out of the fulling material, because, according to experience, much soap and time is thereby saved. Ammonia, now, has the property of acting upon some dyestuffs, so as to give them a bluish tone, as, for instance, is the case with archil and cochineal; several artificial green dyestuffs are dulled by ammonia, the blues are shaded darker, the violets lighter, etc. It needs not to be said that this behavior must be taken into consideration, and that the alteration of the color, if it takes place, must be corrected by washing with a little acid.

A great inconvenience, which is peculiar to the washing department, is the smutting off of the color. The material may run for hours upon the washing machine, and the waste water flow off perfectly clear, and yet more color comes out from it on strongly squeezing it in the hand; in many cases the water is all the time clear, and only after drying shows the material the defect of smutting off. The cause of it can be different; either is the defect attributable to the fulling, or its cause may be found in the preceding stages of the manufacturing process, or finally in the dyehouse.

Let us take it for granted that, if calcareous water must be used, it is always corrected, because the smutting off can in the first place be caused by the formation of insoluble lime soaps (settling back of the dirt in washing), etc. If the raw material used belongs to the wools which have been washed in summer, it still contains much of the natural grease, which it had not been possible to completely remove in washing and fulling. Or the wool may in the spinning department have been dressed with cheap insaponifiable oils; when the fuller must bring all his skill to bear to cleanse such a piece of goods; but in most cases such goods, although pure white and colorless, do not emerge from the fulling mill perfectly clean. If they are then

carbonized the grease penetrates still deeper into the fiber and is no longer removable by the subsequent dyeing and washing. That under such conditions the goods, when dry, must smut off and feel greasy, is clear, but it would be unjust to make of the dyer the scapegoat for it. When such a piece of goods is extracted with alcohol and ether, the grease is without difficulty determinable as dissolved in the latter. But the case is very different if the dyer has actually blundered in dyeing; in that case the material has not a sticky but rather a dry feel, and no grease can be determined in it with ether. However that may be, the following procedure corrects the trouble in many cases, viz.: In the case of white material is after fulling the soap dirt mostly rinsed off upon the washing machine, which requires one-half to three-fourths hour, then the cocks of the supply and waste pipes are shut and the material for one-half hour run in dilute sulphuric acid, the proper degree of concentration being 2 deg. Be. Thereby is the soap in a finely distributed insoluble form precipitated in the material and can easily be removed, especially upon the broad washing machine. The material is then easy to dye and does not in the least smut off. In the case of black or colored goods which show the defect of smutting off, the same treatment is applied, provided the colors allow it. In both cases the acid bath is followed by one-half to two hours' rinsing in pure water.

### NEW DYESTUFFS.

#### NEW COAL TAR COLORS.

Acid Violet 9B.—The latest addition to the Acid Violet family; besides possessing the same strength and properties as Acid Violet 6B, it is faster to alkalis than the latter product, and will compete against it.

Paper Black T and Coal Black B.—These new colors are especially adapted for paper dyeing. They dissolve very easily in hot water, and when combined with one another, produce a fine deep and useful black shade. A pattern card has just been compiled (No. 738, 1899), showing these new products dyed on white paper pulp.

Benzo Nitrol Black B and T.—Some two years ago a new process for producing shades dyed on cotton, fast to washing, consisting of an after-treatment with diazotized Paranitraniline or Benzo Nitrol. Colors represented in this list of dyestuffs are Direct Yellow, Yellow P R, Chloramine Orange, Chicago Blue, Benzo Nitrol Brown, Pluto Brown and Direct Fast Brown. The above two new products.

Benzo Nitrol Black B and T have just been added to the list, and are capable of producing good blacks by this simple method of dyeing. Benzo Nitrol Black B yields a bluish black; the "T" quality a coal black shade, which can be brightened by topping with Methylene Blue. The fastness to washing of the T brand is slightly inferior to the B brand, which latter, however, is on a par with the fastest of the existing diazotizable colors. The fastness to light of both products is equal to the fastest diazotized and developed colors.

#### NEW SHADE CARDS.

Benzo Nitrol Black B and T, on cotton yarn, No. 742, 1899.

Paper Black T and Coal Black B, on white paper pulp, consisting of 60 per cent. wood pulp and 40 per cent. cellulose, No. 738, 1899.

Victoria Blue B and New Victoria Blue B, on wool and cotton yarn, No. 735, 1899.

Half Wool Ladies' Covert Coating.—Shades fast to light, No. 720, 1899.

Direct Blue Black 2 B, on cotton, No. 729.

Fancy woven cotton dress and apron material, No. 723, 1899.

Fancy shades on carpet yarn, No. 728, 1899.

Benzidine colors on cotton yarn 11, No. 712. This card shows three classes of Benzidine colors, viz., Diazo colors,

Benzo Nitrol colors, Benzo Chrome colors, and others, after treatment with metallic salts.

Samples, instruction circulars, and any of the above new shade cards mailed gratis to interested dyers by the Dominion Dyewood & Chemical Co., Toronto, Canada. Sole agents in Canada for the Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany.

### THE LATE EDWARD LEADLEY.

A man who started life in a small way, and by arduous application to work reached an enviable position of wealth and respect, died last month in Toronto, in the person of Edward Leadley, one of the most extensive dealers in wools and hides in Canada. His death came as a shock to his numerous friends, for ten days before he was doing business in his usual genial manner. Yet for the past five months he had been unwell, though never complaining. A week before his death he was compelled to take to his bed. His wife and family were present when the end came.

Mr. Leadley was born in Scarborough, England, January 3rd, 1827. He was a dealer in grain and flour at an early age, and at 23 came to America, settling in Dundee, in the State of New York. Here he started a mill, which engaged his energies till 1863. In that year he came to Toronto, and began business at the corner of Queen and Crawford streets, where to-day is a branch of the firm's business. In 1864 he turned his attention to the leather trade, and dealt extensively in wools and hides. By 1865 his business had grown to such proportions that he was compelled to open a large store at 87 East Front street, where the present headquarters are. Mr. Leadley was interested in many financial enterprises. He was president of the Standard Woolen Mills Company of Toronto, and was senior director of the Dominion Bank. His personal estate was large. He owned all the houses on Esther street, Toronto, and had a handsome residence at No. 25. It is said that few men in Canada could write their cheque for more ready money than the deceased. Besides a widow, four children are left to mourn the loss of a faithful husband and devoted father. The wool business of the deceased will be carried on under the old name by Percival Leadley.

### RAW COTTON.

Since the crop has been on the market a considerable advance in price has taken place. That these advances are to a certain extent speculative is undoubted, and so far as this is the case a reaction is only to be expected; a feature of the market which is of interest, as it may help a little later on to precipitate a crash is that a great many speculators are now operating in the cotton market to whom, saying the least of it, the cotton market is not an old story. They are doing very nicely in a using market, but experience is just as necessary as money in these matters, and we have heard it predicted that some of our manufacturers will have more of the former and less of the latter before the next crop is ginned.

The cotton acreage this year is smaller than usual, but it is reported that the yield is more plentiful, and this may make up for the reduction in the acreage. The United States Government crop report, printed about the middle of September, says the condition of cotton September 1, was, with the exception of the year 1896, the lowest September condition in 25 years. The serious decline in condition is the result in the main of long continued drouth. Where local rains have fallen they have generally been so heavy as to still further aggravate the situation. The advances in spot cotton have been very marked, and the first week in October 75-16 cents was quoted in New York, and March futures sold at 7.29.

**THE LATE DAVID BRECKENRIDGE.**

Sincere regret was caused throughout manufacturing circles in Canada by the announcement that the injury which David Breckenridge, superintendent of the Cornwall Mufg. Co.'s mills, had received a short time ago at Cornwall, had proved fatal. He was taken to the hospital, and his little toe was amputated, in the hope of arresting the spread of the poison in his blood, but without avail, and the end came very suddenly. Mr. Breckenridge was born in Scotland, and after coming to this country, spent some time in the Eastern States, and in Streetsville and Cobourg, Ont., after which he became super and designer in the Clyde woolen mills at Lanark, Ont., where he remained for a number of years. From there he went to Carleton Place, and assumed charge of the Gillies Co.'s mill, where he spent about fifteen years. About a year ago he took the position he held at the time of his death. He took an active interest in affairs of Church and state.

**RECENT CANADIAN PATENTS OF INTEREST TO THE TEXTILE TRADE.**

No. 63,291.—Sewing machine for sewing filled sacks; A. T. Timewell, Chicago, Ill.

No. 63,319.—Loom; the American Automatic Loom Co., New York.

No. 63,320.—Thread carrier for looms; the American Automatic Loom Co., New York, N.Y.

No. 63,350.—Treatment of cotton seed; J. C. W. Stanley, London, England.

No. 63,361.—Apparatus for making Mosaic cloth; Frederick Walton, 114 Holborn, London, England.

No. 63,382.—Treatment of plants used in textile industries; Dr. August H. Prinz, Vienna, Baumgarten, Austria.

No. 63,405.—Fabric winding machine; B. D. Wight, Napinka, Manitoba.

No. 63,542.—Bobbin and thread holder; Burr's Bobbin Holder and Thread Catcher Co., Hartford, Conn.

No. 63,586.—Spindle; James Battersby, Philadelphia, Pa.

No. 63,621.—Spinning wheel; A. E. Vezina, St. Gabriel de Brandon, Quebec.

**THE WOOL MARKET.**

The September series of Colonial wool sales in London opened with a large number of buyers present, and animated bidding. Prices ruled 5 to 7½ per cent. higher than the July sales for cross-breeds, which were taken freely for the home trade; and Cape and Natal sold at 10 per cent. advance. The advance in scoured merinos was 10 to 15 per cent. Yorkshire buyers secured most of the cross-bred wools in competition with German buyers, and the wool is of fine quality. Americans bought a fair quantity of scoureds and greasy at full prices. As the sales progressed prices showed a hardening tendency, though the American demand was not maintained throughout the sales. The total sold was 180,000 bales, of which 123,000 were taken for the home trade, and 53,000 for the continent. About 15,000 bales were held over.

In the Toronto market there is no movement in the export trade. The Ontario woolen mills are, however, busy, some of them having orders for months ahead. In consequence of the pronounced tendency of the woolen goods trade in favor of coarse wool fabrics, there is a feeling among dealers that prices of Canadian wool will take a turn for the better. Only one buyer from the United States has been in the Ontario market this season, and he returned without making any purchases to speak of, as the prices asked were still too high to enable him

to operate under the present tariff. He was only prepared to offer 15 cents. For most of the lustre wool now held in the United States 15 to 18 cents was paid months ago. Prices are quoted in Toronto as follows: Fleece, 15 to 16c.; super, 18c.; extra super, 19 to 20c.; unwashed, 9 to 9½c.

Regarding the Winnipeg market The Commercial says: The Manitoba clip is understood to be pretty well all marketed now. Dealers will pay for round lots of unwashed fleece 7 to 8c. per pound.

The Montreal wool market is very firm for all grades of fine foreign wools, which are getting very scarce in first hands. Manufacturers are buying more freely than at the beginning of this month at the advance. Cape greasy is quoted at 19½ to 22½c.; scoured, scarce at 50c.; Australian greasy, 27 to 30c.; B.A. washed, 40 to 50c., according to quality and condition. Coarser wools neglected but a slight advance on previous quotations is obtainable when wanted.

At the wool sales at Antwerp on the 11th inst., 2,280 bales were offered, including 896 Buenos Ayres, 468 Montevideo, 366 Australian, and 162 Cape of Good Hope and Natal. The selection was very poor, and the demand was light, except for well-grown qualities. Half of this wool was withdrawn, owing to the bids not reaching the limit placed by holders.

**FABRIC ITEMS.**

Jas. E. Roy, dry goods dealer, Halifax, has registered under the style of George T. Smith.

The Union Hat factory (Donald McIntosh, proprietor), Hamilton, is being sold by the bailiff.

Charles Raymond, glove and mitt manufacturer, Montreal, has asked the Vancouver Board of Trade for information as to inducements for the establishment of a glove factory in that city.

The Walkerville, Ont., Novelty Co., has been incorporated with \$10,000 capital, to manufacture buttons and other small wares. It will give employment to half a dozen persons to start with.

C. K. Hagedorn has purchased a property on King street, between Dr. Hett's and the Cairnes Glove Works, and will erect a large modern suspender factory there as soon as spring opens. —Berlin News Record.

John Doull, president of the Bank of Nova Scotia, died in Halifax a short time ago. The deceased was a prominent merchant of Halifax, being a member of the wholesale clothing firm of Doull & Gibson.

Robt. C. Wilkins, manufacturer of the "Rooster" brand of clothing, is making additions to his factory in McGill street, Montreal. A button-holing machine and a number of sewing machines are now being put in.

The clothing store of R. B. McGregor & Co., St. Thomas, Ont., Talbot street, was almost totally destroyed by fire last month. The stock was estimated to be worth about \$9,000; insured for \$5,000. Origin of fire unknown.

The employees of the D. McCall Company, Ltd., Toronto, wholesale milliners, were entertained recently at a farewell dinner to William Darsly, one of the travellers, who is about to sever his connection with the firm, to go into business for himself at Lindsay, Ont.

C. J. Grenier, corset manufacturer, St. Catherine street, Montreal, has assigned with liabilities of \$28,834. His wife and children by his first marriage are creditors to the extent of \$13,000. Mr. Grenier formerly manufactured corsets for the wholesale trade, but when prices became cut he sold off his machines and retired from business for four or five years. When he resumed business about three years ago, he manufactured corsets to order for retail customers.

George Mickleborough, of St. Thomas, has purchased an interest in the wholesale woolen firm of Mickleborough, Muldrew & Co., Toronto.

Three agents of Prossner Bros., New York—Sydney Allandorf, Harry Hynes and Charles Salmon were arrested in Montreal, being charged with theft. It is alleged that they stole 260 skirts, valued at about \$1,200, from their employers. The prisoners were appointed Canadian representatives of the American skirt firm some months ago, with headquarters at Montreal, and as such received the dress goods as samples for the fall trade. Criminal proceedings were instituted after the men left Montreal suddenly, and by further enquiries it was found out that they sold the skirts.

On the 1st December next the wholesale dry goods house of James Johnston & Co. will cease to exist in that name, and will become the Montreal branch of the W. R. Brock Co., of Toronto. The firm of James Johnston & Co. is one of the oldest if not the oldest, wholesale dry goods houses of Montreal. Wm. P. Slessor, its popular manager, who has been connected with the firm for forty years, will remain with the business as its Montreal manager under the new style. The W. R. Brock Co. will now have a strong hold on the trade of Quebec and the Maritime Provinces, as well as in Ontario and the West.

## 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 share in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.

The Dunnville, Ont., Hammock factory has started running with fourteen hands.

The Oxford, N.S. Woolen Mill Co. is adding a new mule to its spinning department.

Walter Dunham, an employee of the Canadian Colored Cotton Mills Company, Hamilton, Ont., had his hand crushed by a carding machine a short time ago.

It is stated by the St. John's, Nfld., Herald, that the Royal Stores Clothing Factory is to be enlarged and a woolen mill added to produce the cloth required by the clothing factory.

Peter Scott, who has been superintendent of T. V. Colville's woolen mills at Lanark, Ont., for very many years with great success, is to become superintendent of the Gillies Co.'s woolen mills in Carleton Place, Ont.

Recent additions to the Montmorency Cotton Mills Co.'s buildings, Montmorency Falls, Quebec, afford considerable additional storage space for raw materials, etc., but do not affect the company's manufacturing capacity.

The Dominion Suspender Company and the Niagara Neckwear Company, Niagara Falls, Ont., have in course of erection an addition to their works. The new addition will be larger than the whole of the present factory.

Alexis Robert, Joseph Henri Ostigny, Alderic Lemaire, William Renaud and Aquila Cheval, all of Montreal, are applying for incorporation under the name of the Franco-Canadian Soap Manufacturing Company, with a capital stock of \$15,000. The head office is to be in Montreal.

Twenty of the leading furniture manufacturing firms in Ontario are considering ways and means to consolidate their businesses into one corporation. The proposed capital is \$1,500,000. Among those interested in the proposed consolidation are, T. H. Hobbs, London, Ont.; Simon Snyder, Berlin, Ont., and O. G. Anderson, Woodstock.

R. G. Trenholm has retired from the Coatocook Woolen Co., and P. H. Armitage is now sole registered proprietor.

In the Kingston, Ont., Hosiery Co.'s mills about 250 hands are at present employed, and the mills are, as usual, working at their full capacity.

D. Shepherd, former proprietor of F. Scantlion's garnetting plant, Almonte, Ont., has gone to Connecticut, U.S., where he has secured a position in a large mill.

A large amount of new machinery has been ordered by the Ontario Government for the rope-making department of the Central Prison, Toronto, and will soon be in place.

Work was commenced at Roschman's button factory, Waterloo, Ont., after being closed down for a week to put in a new 75 h.p. boiler, manufactured by the Goldie & McCulloch Co., Galt, Ont.

W. M. McCausland, J. C. Hutchison, J. W. Bain, D. W. Glass and T. D. Bailey, Toronto, have been incorporated as the Continental Costume Co., Ltd.; capital, \$40,000; chief place of business, Toronto.

W. H. Storey & Son, glove manufacturers, Acton, Ont., now display over their factory a sign, bearing the firm name, which is 100 feet long, and lighted with 340 electric lamps. The sign is plainly visible for many miles.

Longueuil, Que., has bought the foundry premises from the estate of R. H. Ives & Co., which it is leasing to the Alaska Feather & Down Co., at a nominal rental, as part of the inducement given by Longueuil to secure this industry.

David Walker, of the Walker House, Toronto, has sold the vacant property at the southeast corner of York and Front streets, Toronto, to W. R. Johnson, of W. R. Johnson and Co., wholesale clothiers, Front street, who intend to erect a new factory next year.

There has recently been a strike in the spinning department of the Dominion Brussels Carpet Co., Sherbrooke, Que. Inexperienced girls, who had been hired at small wages with the promise of an advance when they had learned their work, demanded full pay before the management thought them entitled to it.

The new clothing manufacturing business established in Winnipeg last spring, under the name of the Hoover Manufacturing Co., has proved so successful that the company has recently given an order to double the capacity of the plant. In addition to overalls, etc., it is proposed to now undertake the manufacture of shirts and clothing.

Reference has been made in these columns to the new additions to the Guelph Carpet Mills Co., which are being built for the introduction of Wilton and Brussels carpets in Canada. A new building, 100 x 60 feet, will be devoted to weaving the new goods, and the ingrain looms will be also moved to this building. A building 60 x 40 feet has also been erected as a storage room for yarns, which are imported from England. The dye-house has also been enlarged; a new boiler put in, and a dynamo for electric light installed.

There are further rumors of a new cotton mill for Toronto. An evening paper says: "For several months past Assessment Commissioner Fleming has been negotiating with agents representing a large concern already located near Boston, Mass., for the establishment of cotton mills in Toronto. According to the scheme outlined to Mr. Fleming, the factories would be the largest in Canada. How far the negotiations have progressed could not be learned." We believe the only basis for the above statement is that a Boston firm representing some New England mills made enquiries of the Commissioner as to the taxation on such industries in Toronto.



Wm. Storey, employed for the past thirty-five years by the Canadian Rubber Co., Montreal, died at his home there last month.

The R. Forbes Co., Hespeler, is preparing to put up a new addition, 60 x 160, three stories high, to their worsted and knit goods factory.

Part of the machinery of the late Guelph Woolen Mills Co. has been sold by Geo. Reid & Co., Toronto. The balance remains to be disposed of.

The damages caused by fire early last month to the Watchorn & Co., Merrickville, Ont., have been made good, and the work of the mill resumed.

Among the cargo of the steamer "Scotsman," wrecked in the Straits of Belle Isle last month, were four cases of machinery consigned to the Rosamond Woolen Co.

C. P. Grierson was presented by the employees of the Hawthorn woolen mill with a secretary in quarter-cut oak, on the occasion of his leaving to take charge of the Clyde mills, Lanark.

Joseph Burrows met with a painful accident a short time ago in the Gillies Company's woolen mill at Carleton Place, Ont. While feeding the carding machine his hand became entangled in some way, and was drawn into the machinery.

Joseph Cartlidge & Son, Guelph, Ont., are putting two more mules, for spinning hosiery yarns, into their knitting factory at Guelph. The mules have about 650 spindles in all, and were purchased through Geo. Reid & Co., Toronto.

Miss McCreary, a weaver in Brodie's mill, Hespeler, Ont., met with a very painful accident the other day. Her right hand got caught in the gears of the loom and the third and fourth fingers were crushed so badly that they had to be amputated.

The new Dundee, Ont., woolen mill was put up for sale last month. The machinery only was sold, for \$300, to F. G. Tapplet, of Bloomingdale, for whom Mr. Talbot, late of Elora, is manager. The new Dundee mill, which was formerly owned by Charles L. Kauffmann, has been idle for four or five years.

The Milltown correspondent of the St. John Telegraph says: The St. Croix cotton mill intends only taking on men to learn weaving in future. This is owing to the fact that the new looms for weaving figured designs are too heavy to be operated by girls. Next year this mill will turn out the most intricate and beautiful designs in cotton goods yet attempted in Canada.

J. P. McLennan, lately dismissed from the position of secretary of the Eureka Woolen Mfg. Co., of Eureka, N.S., has gone to seek his fortune in Dawson City. F. W. Harley, the new secretary, is a man of sterling character and large business experience, having been prominently connected for years with one of the largest business firms of Nova Scotia. The Eureka mill is now running to its fullest capacity.

R. Schofield, Court street, Toronto, is making arrangements to supply some of the latest models of American knitting machinery to the Canadian trade. The Tompkins Bros., and Campbell & Clute patterns of machines will be supplied to Mr. Schofield, who will manufacture the machines in Toronto, thus saving the duty, while at the same time he will put his best workmanship into the machines to ensure satisfaction to the purchaser.

On the receipt of the ultimatum from the Boer Government the War Office communicated with the Canadian Government, and as a result a rush order was sent to the W. E. Sanford Mfg. Co., clothing manufacturers of Hamilton, for 2,000 pairs of infantry trousers, and 2,000 tunics. These are sufficient to uniform 1,000 men, though it is reported as we go to press that only 500 men will be taken from Canada, to be ready for embarkation from Montreal on the 21st for South Africa.

Joseph Thibault, Montreal, in his quality of tutor to his minor son Amedee, has taken an action claiming \$1,000 damages from the Dominion Cotton Mills Co. The action is based on an accident by which the young man lost one eye, while working in defendant's factory. He alleges that, when passing near the machinery where hoop-iron was being cut, a splinter struck him in the eye, and he holds the company responsible, on the ground that the machinery was not properly fixed to prevent accidents.

**SITUATION WANTED**—Blanket Mill Manager. 20. Experience on all kinds of bed, steamboat, railroad and heavy camping blankets, and all kinds of carpets and yarns. Warrant from 10% to 15% profit per year. Address **MANAGER**, care of Canadian Journal of Fabrics, Toronto.

**WANTED**—At once—Young man to run a set of cards. Wages \$6 per week. O. HARE & SONS, Milland.

**WEAVERS WANTED**—Good for fancy looms. A. W. BRODIE, Hespeler, Ontario.

**WEAVERS WANTED**—Immediately, for Crompton and Knowles' looms. Apply **CORNWALL MANUFACTURING CO.**, Cornwall, Ont.

**WIRE MATTRESS Weavers wanted.** Steady work. **GOLD MEDAL FURNITURE MFG. CO.**, Limited, Toronto.

**TO CARPET SALESMEN**—Wanted two wide awake travelers to sell Brussels and Wilton Carpets and Rugs. Must be experienced and reliable business men. Our connection with the trade is well established, and a most satisfactory contract will be given to men who can sell goods. Apply at once with references to **THE DOMINION BRUSSELS CARPET CO.**, Limited, Sherbrooke, Que.

**WANTED**—Man thoroughly acquainted with the manufacture of Worsted and Mohair Braids. None but experienced hands in the manufacture of braids need apply. Address No. 6, Canadian Journal of Fabrics.

**POSITION WANTED**—Young man of good education, at present employed as superintendent in a large woolen mill in the south of Scotland, would like similar position in Canada. Can assist in designing. Address "SUPERINTENDENT," care of Canadian Journal of Fabrics, Montreal, Que.

## CAPITAL WANTED.

By a thorough practical worsted spinner (with small capital), a partner with capital, to start worsted spinning business and weaving worsted goods, in Canada, as there is a good opening for same, with good inducement offered at some places, correspondence confidential, only those with capital need apply. For further particulars address **CANADIAN JOURNAL OF FABRICS**, Box 7.

## WANTED

**A Practical Wool Carder and Spinner**, with small capital, to join dry goods merchant in yarn and hosiery business. Merchant handles lots of wool, and has small good paying plant now running. Want live man, with Christian principles. Correspondence invited. Address **K. GODSOE**, 17 Charlotte St., St. John, N.B.

## FOR SALE CHEAP

One Crompton Loom, has not run much; 34 harness; 4 x 4 shuttle boxes; 49 inch reed space. **CHAS. SCHILLING**, Auburn, N.Y.

## FOR SALE.

Woolen Mill in the Province of Quebec, near St. Lawrence River, and on line of railway; substantial stone buildings, both flour mill and carding mill, excellently situated for a large flour, pulp or woolen mill, and having the good will of a large country trade; owner wishes to retire because of advancing age, stone dwelling house attached, and the property in every way a desirable one. Address **O. G. P.**, care Canadian Journal of Fabrics.

# MACHINERY FOR SALE.

The Machinery of the GUELPH (Ontario) Woolen Mills has been placed in the hands of

## GEO. REID & COMPANY

118 Duke Street, TORONTO,

For Sale. This plant includes Carding and Spinning Machinery Description and Prices forwarded to intending purchasers.



The Aylmer Sun is authority for the statement that a new woolen mill, to cost \$30,000, and employ 60 to 100 hands, is to be built at Port Dover.

The weaving department of the Dominion Cotton Mills Co.'s plant in Kingston, Ont., is closed down for a month to allow for the placing of a lot of new shafting, new looms, etc. Twenty of the employees of the department were moved to Montreal at the company's expense, and will have work there during the close-down.

The Montreal Weaving Co., of which Ernest A. Duverger is registered proprietor, and Henry Duverger manager, has assigned. The business was started last year for the manufacture of damask table and furniture coverings, and operated five looms. H. Duverger was formerly in the jobbing dry goods trade. The liabilities are estimated at \$26,700; assets not stated.

The bonus from the city of St. Henri, Que., to the Merchants' Cotton Co.'s new mill, recently referred to, has been passed. The corporation grants exemption from taxes on condition that the company employs 300 more hands, with an annual wage bill of \$50,000. The new factory is to be 300 feet long, four stories high, and will contain 500 looms and 20,000 spindles. It will make hosiery yarn and print cloth.

## FOR SALE

### Entire Equipment of Cotton ... Mill ...

Spinning, Weaving and Twisting; 8,000 spindles all in first-class condition; cash or part cash and part bonds. For particulars address COTTON MILL, Office of the Canadian Journal of Fabrics.

## Dye Stuffs

Chemicals

## ..Alizarines..

DIRECT DYING ANILINES FOR

COTTON & WOOL

## Dyewood Extracts

### F. E. ATTEAUX AND CO.

53 Colborne Street, TORONTO

15 Lemoinc Street, MONTREAL

NEW YORK, PHILADELPHIA.

BOSTON.

CHICAGO, GLOVERSVILLE, N.Y.

The Thorold knitting mill of the Penman Mnf. Co. is now running overtime.

G. A. Dick, late superintendent of the Gillies Woolen Mill, has taken charge of the Hawthorne, so that we will not lose Mr. D. from our citizenship after all. It is simply a change about. Mr. Scott comes from Lanark to the Gillies Mill, and is replaced by Mr. Grierson of the Hawthorne, and Mr. Dick goes over from the former to the latter. Each of the gentlemen named are now established in their new positions. Mr. Dick was presented with an address by the employees of the Gillies mill on leaving. The address was accompanied by a travelling bag and smoking set.—Carleton Place Herald.

### CHEMICALS AND DYESTUFFS.

Business has improved somewhat: advance in all lines. Soda ash has gone up 20c. per 100 lb.; Caustic 40c. per 100 lb.; Bluestone very firm. Orders numerous for delivery before close of navigation. Sumac very firm.

Bleaching powder .....	\$ 1 95	to \$ 2 00
Bicarb. soda .....	2 00	" 2 05
Sal soda .....	0 70	" 0 75
Carbolic acid, 1 lb. bottles .....	0 35	" 0 37
Caustic soda, 60° .....	1 75	" 1 80
Caustic soda, 70° .....	2 00	" 2 10
Chlorate of potash .....	0 13	" 0 15
Alum .....	1 35	" 1 50
Copperas .....	0 70	" 0 75
Sulphur flour .....	2 00	" 2 50
Sulphur roll .....	3 00	" 3 50
Sulphate of copper .....	5 00	" 5 50
White sugar of lead .....	0 07	" 0 08
Bich potash .....	0 09	" 0 10
Sumac, Sicily, per ton .....	70 00	" 75 00
Soda ash, 48° to 58° .....	1 15	" 1 25
Chip logwood .....	1 90	" 2 00
Castor oil .....	0 09	" 0 09½
Cocoonut oil .....	0 06½	" 0 07

## A. KLIPSTEIN & CO.

122 PEARL STREET, NEW YORK.

### Chemicals & Dyestuffs

Fast Color for Wool—Dry Alizarine, Phenocyanine, Gallocyanine  
Direct Cotton Colors—Auramine, Congo Red.  
Azo Colors—Naphthol Yellow, Orange, Scarlets, Fast Red.

#### HEADQUARTERS FOR

Caustic Potash 90%      Carbonate of Potash  
Chlorate of Potash      Bleaching Powder  
Phosphate of Soda      Refined Cutch A.K.C.

WRIGHT & DALLYN, Agents, Hamilton, Ont.

# JOHN W. LEITCH & CO.

Milnebridge Chemical Works, near HUDDERSFIELD, ENGLAND.

PHENYLENE DIAMINE (DISTILLED)  
TOLUYLENE DIAMINE (DISTILLED)

Bismarck Brown, Chrysoidine, Crystals and Powder. Largest makers in the world.

Soluble Blues—all shades.  
Dinitro Benzol and Dinitro Toluol.  
Reduced Indigo, Wood & Leather Stains.  
Specialties for Cotton, Wool and Silk Dyers, Paper Makers, &c.

## Cover Your Own Umbrella

Don't throw away your old one—make it new for \$1. Re-covering only takes one minute. No sewing. A clumsy man can do it as well as a clever woman.

### Ten Days' Free Trial

Send us \$1 and we will mail you, PREPAID, a Union Twilled Silk, 26-inch "Adjustable Roof" (28-inch, \$1.25, 30-inch, \$1.50). If the "Roof" is not all you expected, or hoped for, return AT OUR EXPENSE and get your money back by return mail—questions asked.

**WHAT TO DO**—Take the measure (in inches) of your old umbrella. Count the number of outside ribs. State if the centre rod is of steel or wood. Full instructions for putting on the cover will be sent with all orders. Our special price list of different sizes and qualities mailed on request. Send for our book "Umbrella Economy" anyway. Your umbrella will wear out some day and you will be glad that you know about

## The Jones Umbrella "Roof"

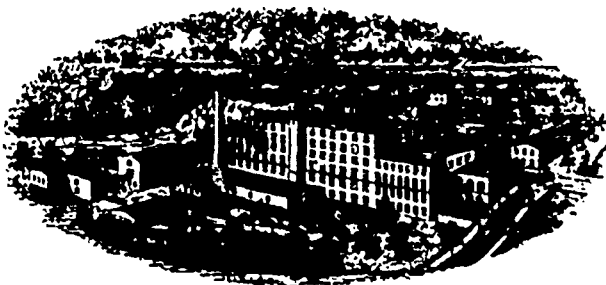


**\$1.00**  
for a new  
UNION TWILLED SILK  
Adjustable Roof

## The Jones-Mullen Co.

396-398 Broadway, New York

## ROSAMOND WOOLEN CO., ALMONTE, Ont.



Fine **TWEEDS, CASSIMERES, and Fancy WORSTED SUITINGS AND TROUSERINGS**

Colors warranted as fast as the best British or Foreign goods

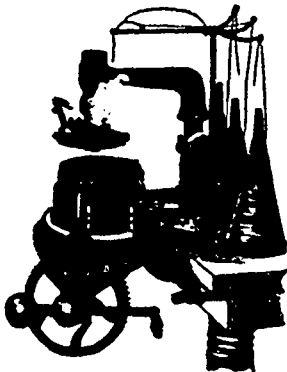
## CREELMAN BROS.

GEORGETOWN, Ont.

Manufacturers of

## Knitting Machines

"THE DOLLAR," Family,  
AND  
"THE STAR," Steam Power,  
AND  
"THE WORLD'S STAR," for  
Knitters



## H. W. KARCH, HESPELER, ONT.

Manufacturer of

Woolen Machinery,  
Rotary Fulling  
Mills, Kicker Fulling  
Mills, Soaping  
Machines, Cloth  
Washers,  
Wool & Waste  
Dusters, Rag Dus-  
ters, Drum Spool  
Winders, Reels,  
Spooling & Doubling  
Machines, Ring  
Twisters, Card  
Creels,



Dead Spindle Spooler for Warp or Dresser Spools,  
Pat. Double Acting Gigs, Dyeing Machines.

"WE HOLD THEE SAFE."

## The Dominion Burglary Guarantee Co.

LIMITED.

Head Office, Montreal, Can.

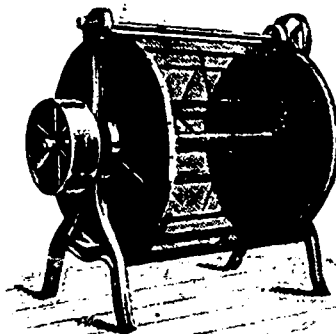
CAPITAL, \$200,000.

Insurance against burglary and housebreaking. Policies clear and free from vexatious or restrictive clauses.

CHAS. W. HAGAN, General Manager

## PATENT WASTE CLEANER

For Cleaning Woollen Card-Waste.



Does not Damage the Staple

Loses Nothing but the Dirt!

Over 500 at Work.

Price £25 packed at Liverpool.  
Space occupied 5 ft. 6 in. x 3 ft.  
Power required 1/2 H.P.  
Production 1000 lbs. per day.  
Weight packed, 14 cwt.

**HENRY SITT, BRADFORD, ENGLAND.**

## DICK, RIDOUT & CO'Y

Office—69 Bay Street,  
TORONTO.

Works,  
Cobourg & Winnipeg.

Manufacturers of

Jute and Cotton Bags

Hessians, Starched and Dyed Jute Canvas.  
Jute Binder Twine, Horse Blankets, Etc.

WOOLEN GOODS, TWEEDS, Etc.

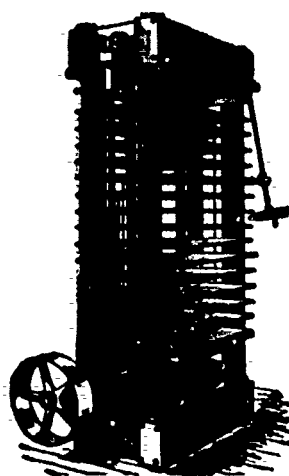
Agents for LOUIS BEHRENS & SONS, Manchester, England,  
Velveteens, Velvettas, Furniture Coverings.

The Canadian Colored Cotton Mills Co. are erecting a large new dye-house for the Canada mill at Cornwall, in which there is also being installed a number of new looms as well as other machinery.

Hugh McLean, of Fredericton, N.B., solicitor of the Bank of Montreal, has visited Montreal to arrange for the transfer of the Alexander Gibson business in New Brunswick to a new company. A mortgage given by the old company has gone on record in the County of York, and \$2,000,000 in bonds to the Bank of Northumberland to secure the Bank of Montreal, which, it is understood, takes over the banking business of the firm. The assets include the Gibson cotton mills, lumber mills, and limits, the town of Marysville, in the county of York, near Fredericton, and the Canada Eastern railway.

The following circular, calling for men, was issued a short time ago, by the Montreal Cotton Company, and it affords a pleasing evidence of the favorable state of the manufacturing industries of Canada at present. "Cotton mill help wanted. To any who may desire to find constant employment, both for themselves and for their families, in a true French-Canadian city, Valleyfield at this moment offers most unusual and exceptional opportunities. The Montreal Cotton Co. have been extending their already immense factories, and are open to engage over 500 employees between now and Christmas. The wages paid in their cotton mills are as high as any paid in the United States, and as a rule higher than any paid in Canada. Short time has never been worked at their mills."

A Montreal bucket-shop concern, carrying on business under the very pretentious title of the Investor's Guarantee Company, and having its habitat under the roof of the Montreal Stock Exchange building, is now numbered among the dead departed. The business was only started in May last, and one J. F. Gillespie, of New York, was registered as the sole owner, but Mr. Gillespie was never known in Montreal, and enquiries made in New York failed to locate him. One Julius Singer, of malodorous business record, as a manufacturer of cloth caps, ladies' underwear, etc., was the apparent directing spirit of the business, and a warrant is reported out for his arrest, on a charge of raising the figures on deposit receipts, but he is believed to have left the city, and the proprietors of the building have taken possession of all the apparent assets to satisfy their claim for rent. The concern advertised extensively in country papers, promising returns of 3 per cent. per month on moneys remitted to them for investment, and they are supposed to have taken in quite a number of gullible ones.—Monetary Times.



**RELIANCE**

**Hot Plate Press**

FOR

**Hosiery & Underwear Trade.**

For Price and Particulars, address

**CHARLES HART**

**Hedge and Brown Streets**

**FRANKFORD, PHILA., PA.**

**RICHARD SCHOFIELD, TORONTO**

Manufacturer of all kinds of

- Cylinder Dials, Cams.
- Yarn Guides.
- Cut Pressers.
- Mill Supplies.
- Fluted Rollers.
- Gear Wheels.
- Worm Wheels.
- Ratchet
- Wheels
- Special
- Screws.
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*Power  
Knitting  
Machines*



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Ontario Agent for the well-known **UNION SPECIAL** Sewing Machine for plain and ornamental stitching, as used in the manufacture of shoes, gloves, underwear, etc. 14 Court Street.

**JOHN GOOD & JENNINGS**

**PATENT  
CORDAGE  
MACHINE  
CO.**

MANUFACTURERS OF

New  
Patented and  
Improved

**Cordage Machinery**

**ALSO OF BINDER TWINE and ROPE**

NOTE—This corporation is not the "John Good Cordage and Machine Co." which is now in liquidation under receiver.

299 to 305 Park Ave., Brooklyn, N.Y.



NEW  
ENGLAND**Ventilating & Heating Co.**

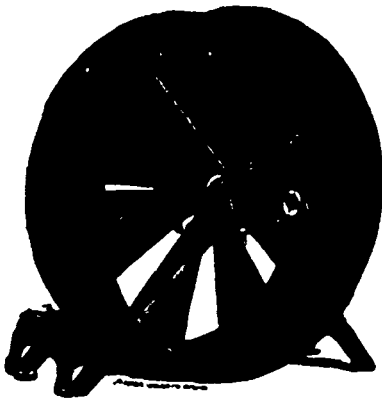
PROVIDENCE, R.I.

R. RICHARDSON, Treasurer

Manufacturers of

**Exhaust Fans, Blowers,  
Ventilators & Sheet  
Metal Pipes.****A workroom well ventilated  
will increase its production.**

Our Exhaust Fans are used extensively for removing smoke, dust, heat and for drying by air circulation.

Office and Works:  
**326, 328 & 330 MANTON AVE.****W. M. M. YOUNG,**  
Manufacturer of **Novelty Braids**For Ladies' Dress and Wrapper Trimmings. Braided and Woven Spool Tapes and Bindings. Tapes for Underwear, and Round Braids. Cotton Banding and Hook Bands. **38, 38 and 40 Frankford Ave., Philadelphia, U.S.****YARNS**

William Hollis &amp; Co., Limited, Nottingham; Cashmere, Worsted, Merino Yarns. David Sandeman &amp; Co., Glasgow; Worsted and Woolen Yarns. William Aykroyd &amp; Sons, Bradford; Mercerized Yarns. James Smethurst &amp; Sons, Manchester and Bolton; Cotton Yarns. Bent Ley Silk Mills, Melbham; Spun Silk Yarns. J. &amp; R. Young, Belfast; Linen Yarns.

Agent for the U. S. and Canada

**W. M. ORWE, 477 Broome St., New York.**

Represented by J. A. ROBERTSON, Board of Trade Building, Montreal.

# The Canadian Textile Directory

**1899 Edition Just Issued.****CLOTH, \$3.00.**

**T**HE CANADIAN TEXTILE DIRECTORY is more than a mere directory of names. It gives facts and figures about the textile trades of Canada which have been attempted in no other work. It contains not only lists of all the general stores, retail dry goods dealers, hat and fur dealers, clothiers, haberdashers, tailors, milliners, etc. (the retail lists contain over 19,000 names), but all the wholesalers and commission merchants or manufacturers' agents in similar lines, and all the mills and factories engaged in manufacturing fabrics connected with the textile and kindred trades. It is the only work in Canada which gives a full list of the boards of trade, commercial travelers' associations, and dry goods and kindred associations, while the immense amount of statistical information, such as the details of the imports and exports of dry goods, etc., the tariff of Canada, of the United States and Newfoundland, sterling exchange rates, etc., make it indispensable in an office of any pretensions.

As an example of the information given in the various lists of manufacturers, the following shows the form of report of the Woolen Mills Name and address of Proprietors, and names of the Officers (if a joint stock company), the capacity in sets of cards, looms and spindles, when established, whether water, steam or electric power, description of goods manufactured, whether the mill has a dye house, and names of selling agents, if any. Corresponding information is

given concerning the other mills, of which the following is a list. Asbestos miners and manufacturers, manufacturers of awnings, batting (wool and cotton), bedding, binder twine, braids, buttons, caps, carpets (including hand loom weavers), children's wear, cloaks, clothing, collars, cuffs, cordage, corsets, cottons, embroidery, feathers, felts, flags, flax, fringes, furniture, gloves, hair cloth, hats (straw, felt and cloth), haberdashery, horse covers, hosiery, jute goods, lace, ladies' wear, mantles, mats, mattresses, men's furnishings, millinery, mitts, neckwear, oil cloth, oiled clothing, overalls, paper, pulp, pins, print goods, regalia, rope, rubber goods, sails, tents, shirts, shoddy, felt, straw goods, suspenders, tarpaulins, tassels, thread, tow, trusses, linens, umbrellas, upholstery, wadding, water-proof garments, webbings, window shades, worsteds, etc. The woolen mills include the carding mills, manufacturers of tweeds, blankets, flannels, yarns, homespuns, and all other piece goods, carpets, felts, and all kinds of knitted fabrics. The cotton mills include all classes of cotton piece goods, yarns, wadding, batting, etc. There is also a complete list of the tanners and curriers, laundries, dyers, dealers in raw wool, furs, etc. Under each heading the whole of Canada and Newfoundland is included.

The number of copies left on hand is limited and those wishing to secure a copy before the edition is exhausted should order without delay. Address,

**Biggar, Samuel & Company.****62 Church Street, Toronto,**

or

**Fraser Building, Montreal**

Copies Mailed post-paid on Receipt of Price

**WILLIAM FIRTH,**  
 IMPORTER OF  
**Textile Machinery**

Equitable Building, Boston, Mass.,  
 150 Devonshire Street, U.S.A.

SOLE IMPORTER OF  
 Hetherington's Patent Revolving  
 Top-Flat Carding Engines.

Combing Machines.  
 Drawing Frames.  
 Roving Frames &  
 Self-Acting Mules.

Curtis Sons & Co., Patent Worsted Card, Woolen Cards and Mules.  
 John Perry, Limited, Shipley, England, Worsted Machinery, on  
 French and English Systems.

William Tatham & Co., Vulcan Works, Rochdale, England, makers  
 of Waste Machinery for Working Hard and Soft Waste, Cop  
 Bottoms, etc.

James Yates and Son, Hardened and Tempered Steel Card Clothing  
 for Woolen and Worsted Cards.

Joseph Stubbs, Manchester, England, maker of Patent Quick Traverse  
 Gassing Frames for Cotton, Worsted and Silk Yarns; Yarn Pre-  
 paring Machines; also, Patent Adjustable Yarn Clearer for  
 Winding Frames.

**Machinery delivered, duty and freight paid,  
 and erected.**

The Improved **AUTOMATIC** BANDING  
**INMAN** MACHINE

MANUFACTURED BY

**COLE BROTHERS,**  
 PAWTUCKET, R.I.

The **ONLY** Automatic Banding Machine in the  
 World for Making Loop Bands.  
 For Driving Spindles.

All the latest improvements are completed and is now ready for the market.  
 Will make a saving of 50 per cent. in cost of making bands, besides the superior  
 quality of the bands over those made on hand machines, which is conceded by all  
 parties using them.

These machines are now in use by the Montreal Cotton Company.  
 We are also Builders of **BEAMING MACHINES**, to beam yarn  
 on the slasher beam.

**A. W. ALLEN**

**Textile Machinery**

Patent upright bottle  
 Bobbin Winder, for  
 Hosiery and Under-  
 wear, both for Skeins  
 and Cops. Plain  
 Spooling Machines.  
 Improved Presser

Drum Spooler. Patent Bobbin Frames. Improved Dresser Spoolers,  
 with fifty-spool Rack, Creel or Cop Stand. Upright Warp Mills,  
 Warp Mill Hecks, from 60 to 300 eyes. Section Warp Mills. Warp.  
 Splitting Machines. Beaming Raths. Yarn Bundling Presses for  
 Cotton, Worsted and Wool. The Old Jackson Winder. Rollers and  
 Shell Rollers. Plain Beaming Machines. Presser Beaming Machines.  
 Patent Cop Winders for Carpet and Woolen Manufacturers and Cot-  
 ton. Breast Reels and Plain Reels, 14 and 16 feet long.

Catalogue sent on application.

2421-3-5 & 7 Mascher Street,  
**PHILADELPHIA, PENN., U.S.A.**

**EVAN ARTHUR LEIGH**  
 Successor to E. A. LEIGH & COMPANY  
 35-36 Mason Bldg., Boston, Mass., U.S.A.  
 IMPORTER OF

**Textile MACHINERY**  
 Etc.

Sole Agent for the U. S. and Canada for

**Messrs. PLATT BROS. & CO.**  
 (LIMITED), OF OLDEHAM, ENGLAND.

BY FAR THE LARGEST MAKERS OF TEXTILE MACHINERY IN THE WORLD

Platt's Cotton, Woolen and Worsted Machinery.  
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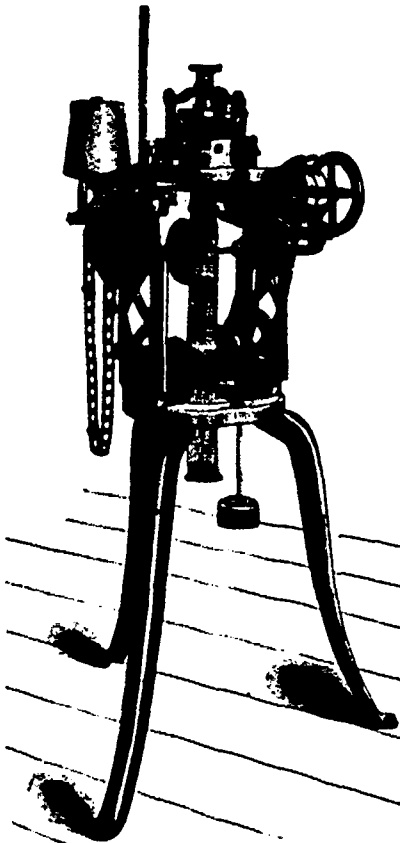
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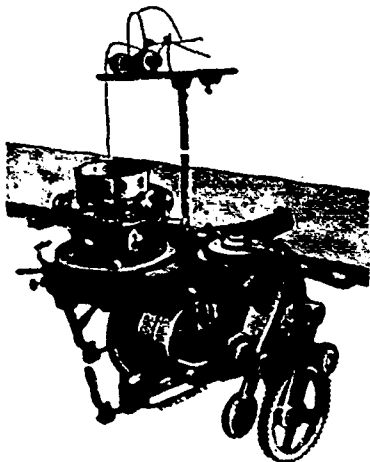
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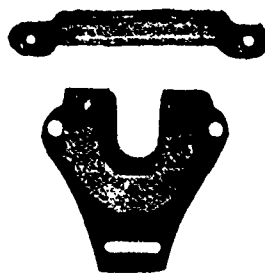


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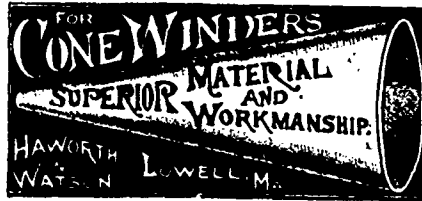


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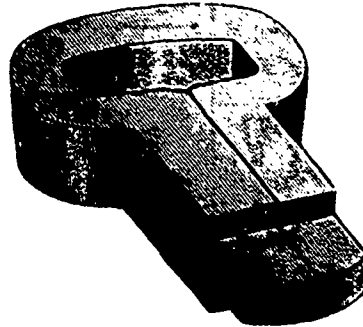
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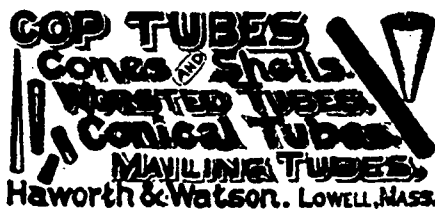
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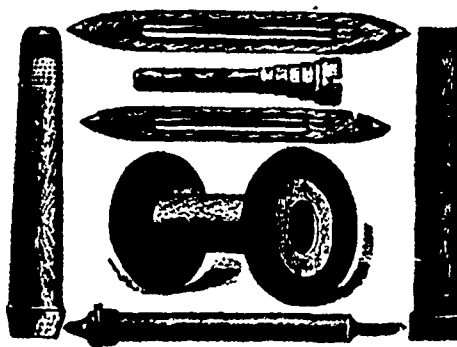
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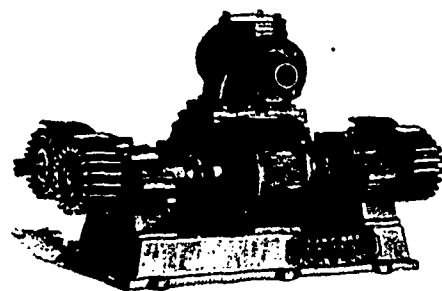
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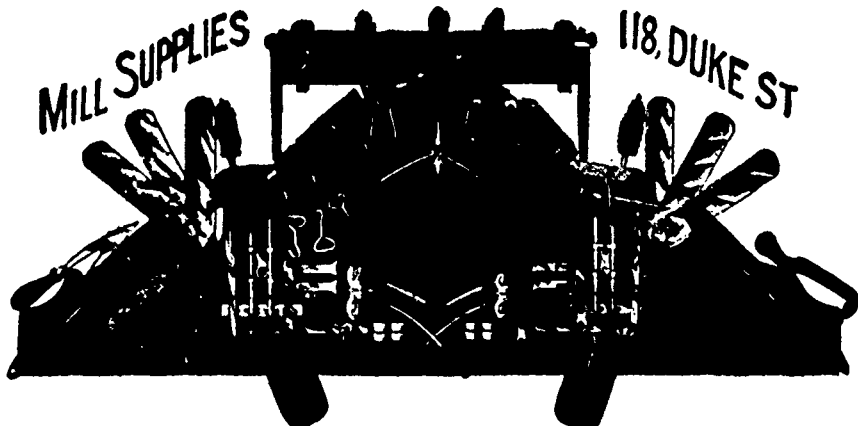


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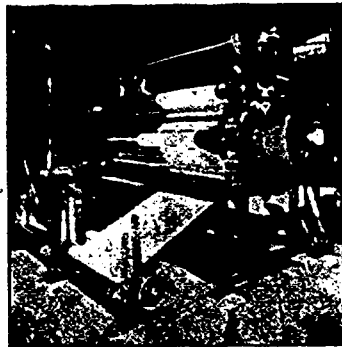
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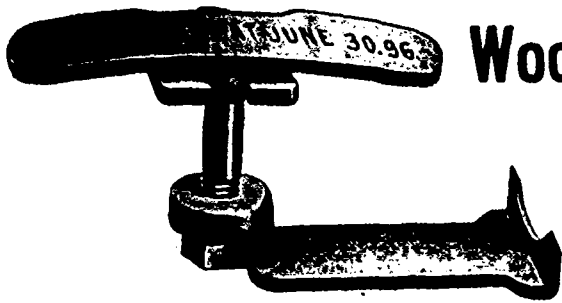
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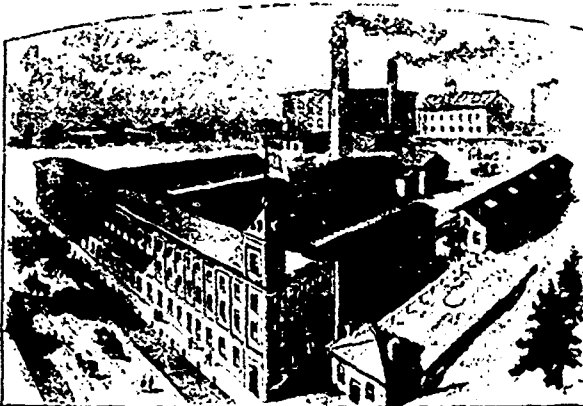
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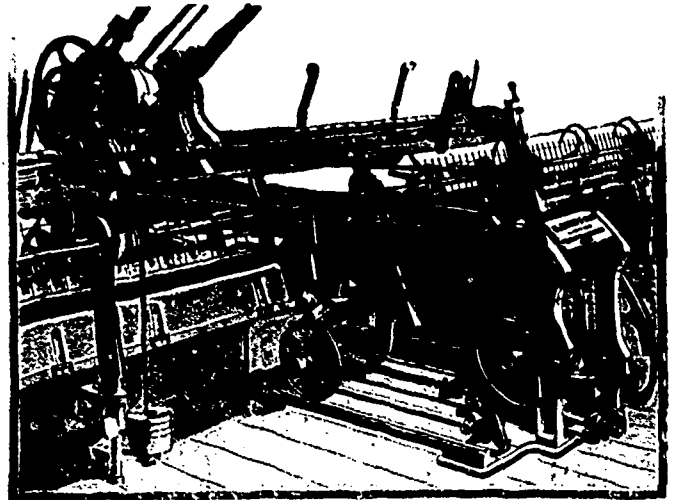


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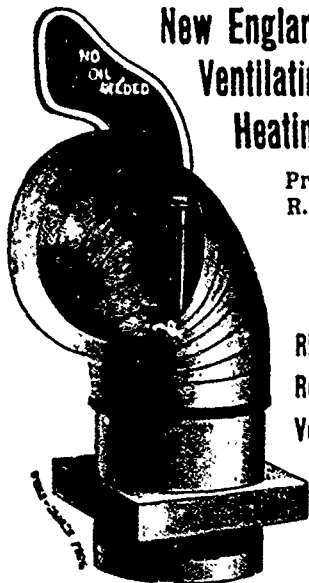
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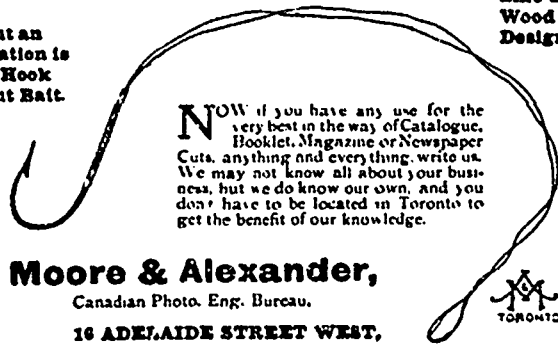
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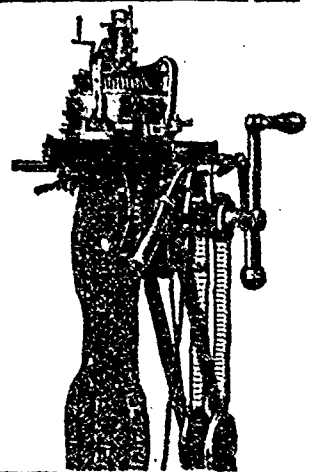
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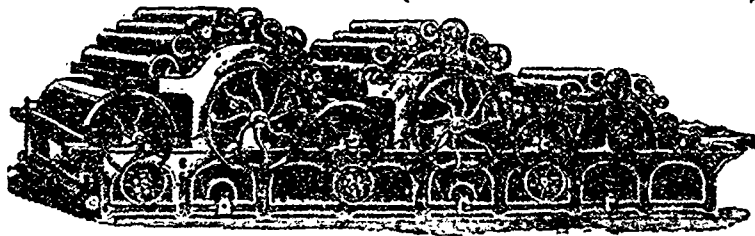
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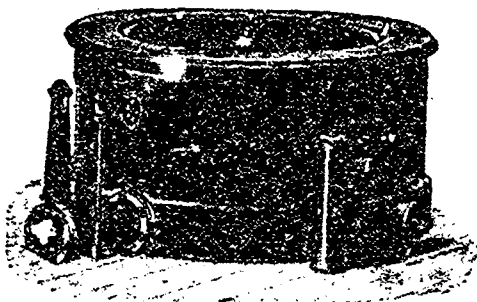
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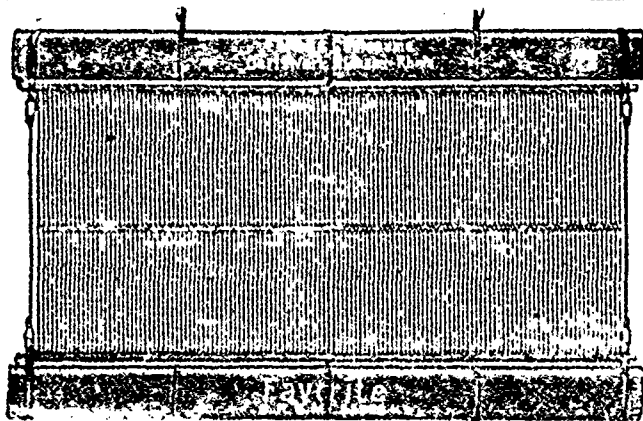
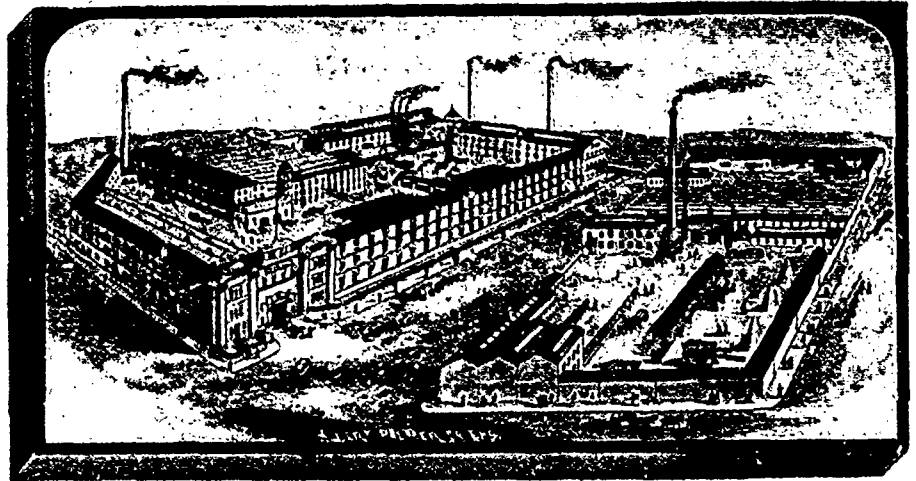
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