



# CANADIAN JOURNAL OF Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIX.

TORONTO AND MONTREAL, FEBRUARY, 1902.

No. 2.

Read the  
Announcement  
On Page 26.

**McARTHUR, CORNEILLE  
& CO.** Importers and  
Manufacturers of



**OILS . . . . .  
CHEMICALS**

and **DYE**

310 to 316 St. Paul St.

**MONTREAL . . . . . STUFFS**

**MILL SOAPS**  
**DOMINION DYEWOOD  
& CHEMICAL Co. TORONTO**  
MANUFACTURERS

**WATSON JACK & CO.**

7 St. Helen St., Montreal.

Full Lines of Dyewoods, Chemicals, Aniline  
and Alizarine Colors, New Chrome Blacks.

SOLE CANADIAN AGENTS FOR

The Society of Chemical Industry in Bale

**ANILINE COLORS.**

**New York and Boston Dyewood Co.**

MANUFACTURERS OF

**DYEWOOD Extracts**

Importers of **INDIGO AND ANILINE COLORS.**

SELLING AGENT IN CANADA

**A. W. LEITCH, 16 Hughson St. South, Hamilton, Ont.**

**CASSELLA COLOR  
COMPANY.**

(American Branch of  
Leopold Cassella & Co.)

**Artificial Dye Stuffs**

NEW YORK, 182-184 Front Street.

BOSTON, 524 Atlantic Avenue.

PHILADELPHIA, 126-128 South Front Street.

PROVIDENCE, 64 Exchange Place.

ATLANTA, 47 North Pryor Street.

MONTREAL, D'Youville Square.

**W. T. BENSON & CO.**

**ANILINE COLOURS  
DYEWOOD EXTRACTS  
CHEMICALS, &c., &c.**

Specialties:

**Logwood for Cotton and Wool.**

**Fast Onedip Cotton Dyes.**

**Alizarines & Azo-Alizarines.**

164 St. James St., Montreal

**BELLHOUSE, DILLON & COMPANY**

SOLE AGENTS IN CANADA FOR

**KUTTROFF PICKHARDT & CO.,  
NEW YORK.**

**Anilines, Alizarines, Indigo, etc.,**

For Cotton, Silk and Wool.

Toronto Office—50 Wellington Street East.

30 St. Francois Xavier St., Montreal

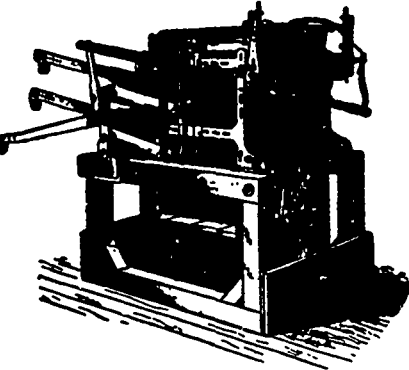
New York Office, . . . . . 26 Cedar Street.

1902

USE THE  
**"Halton"**  
**Jacquard**

**BEST MACHINE ON THE MARKET**

Single Lifts  
 Double Lifts  
 Rise and Falls  
 Double Cy'linders  
 Cross Borders  
 Brussels



"1304" Fine Index  
 Double Lift.

The only  
 Reliable  
 Fine  
 Index  
 Machine.

**Thomas Halton's Sons**  
 Alleghany Avenue and C. Street, - PHILADELPHIA

**ANILINES**  
**ALIZARINES**

**DOMINION DYEWOOD & CHEMICAL CO.**  
 TORONTO

Direct Importers. Sole Agents in Canada for  
 Messrs. The FARDENFABRIKEN Vormals FRIFDR. BAYER  
 & CO., Elberfeld, Germany.

G. THOMPSON.

J. S. MITCHELL.

**THOMPSON & CO.**  
 SHERBROOKE, QUEBEC.

Manufacturers of

**Bobbins and Spools**

OF EVERY DESCRIPTION

For Woolen, Cotton and Rope Mills. Extra facilities for  
 supplying new mills and filling large orders.

Correspondence Solicited.

Orders Promptly Filled.

**Loom Picker Co.**  
**BIDDEFORD, ME.**

H. P. GARLAND, Treas.

MANUFACTURERS OF  
 Rawhide and Leather Loom Pickers,  
 Loom Harnesses and Reeds,  
 Duck and Ticking Lug Straps,  
 Tape Picker Loops, Leather Strapping,  
 Black Oak-Tanned English Picker Leather,  
 North Carolina Hickory Picker Sticks.

Illustrated Catalogue sent on application.

W. H. PARKER

J. H. PARKER

**New Toronto Wool Stock Co.**

Manufacturers of

**CARDED and GARNETTED WASTE**

The Garnetting of Wool and Cotton Waste | Office and Works,  
 a specialty. Wool Stocks in every shade. **NEW TORONTO, Ont.**

"WE HOLD THEE SAFE."

**The Dominion Burglary**  
**Guarantee Co.**

LIMITED.

Head Office, Montreal, Can.

CAPITAL, \$300,000.

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

CHAS. W. HAGAR, General Manager

**ROBT. S. FRASER**

**Wools, Peruvian Cottons,**  
**Noils, Tops, Yarns, Etc.**

**Tetlaw's Card Clothing.**

(STOCK IN MONTREAL).

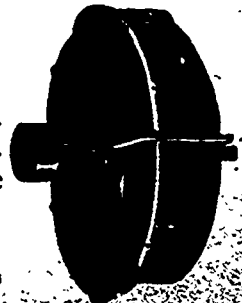
**Manufacturers of Wastes and Shoddies.**

**17 LEMOINE STREET,**  
**MONTREAL**

**Fans and Heaters**

For drying of Wool, Cotton, Cloth, Blankets and other materials.  
 Fans for ventilating and removing refuse, hot and foul air, etc.  
 The Fan system of heating and ventilating large buildings. Write  
 for particulars to

**McEachren Heating & Ventilating Co., Galt, Ont.**



# CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIX.

TORONTO AND MONTREAL, FEBRUARY, 1902.

No. 2

## Canadian Journal of Fabrics

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

Subscription: Canada and United States, \$1.00 per year. Great Britain, 5/ Advertising rates on application.

Offices: 62 Church Street, Toronto and the Fraser Building, Montreal.

E. B. BIGGAR | BIGGAR, SAMUEL & CO. | PUBLISHERS | R. R. SAMUEL

TRAVELLING REPRESENTATIVE: A. W. SMITH.

PHILADELPHIA AGENT: H. E. BURNETTE, 2036 North 13th Street.

BOSTON AGENT: F. F. GRANT, 5 Gayland St., Roxbury.

Toronto Telephone, Main 1392 | Montreal Telephone, Main 2589

Business correspondence should be addressed to Montreal; but cuts, news items and editorial correspondence to Toronto; cuts from abroad should be sent by post wherever possible, not by express. Changes of advertisements should be in our hands not later than the 10th of each month to ensure insertion.

### THE CANADIAN TEXTILE DIRECTORY

A Handbook of all the Cotton, Woolen and other Textile manufactures of Canada, with lists of manufacturers' agents and the wholesale and retail dry goods and kindred trades of the Dominion; to which is appended a vast amount of valuable statistics relating to these trades Fourth edition. Price, \$3 00.

BIGGAR, SAMUEL & CO., Publishers.

### CONTENTS OF THIS NUMBER:

	PAGE		PAGE
Anthracine, Red .....	44	Personal .....	54
American Cotton Industry .....	46	Plea for Technical Training .....	43
Artificial German Dyes .....	48	Popularity of Rugs .....	38
Among the Mills .....	52	Pulp Output of Canada .....	38
Binder Twine .....	37	Queen Victoria and Home-made Flannel .....	43
Bill of Sale, an Ancient .....	38	Registering Device for Looms .....	49
British Factory Act .....	33	Rubber Trade, The .....	40
Canada's Trade Expansion .....	34	St. John Cotton Mills .....	48
Canadian Goods in Newfoundland .....	37	Shaded Piece Dyed Knit Goods, An American on .....	46
Cotton Goods Trade with China .....	50	Sisal Fibre Cultivation in India .....	50
Cotton Manufactures of the World .....	48	Silk Industry in Florence .....	51
" A Puzzling Condition in .....	34	Shoddy Bill, the U. S. .....	37
Foreign Goods, an Avalanche of .....	37	Small Motors .....	37
Fabric Items .....	52	Strike on New Lines .....	38
Fluorescent Colors .....	46	Textile Designs .....	45
Foreign Textile Centres .....	41	Textiles at the St. Louis Fair .....	33
Florentine Woolen Industry .....	54	Transmission of Power .....	48
Flax Raising in the North West .....	35	Water .....	45
Gauge of Spindles on Woolen Mules .....	49	Wool and Pasture .....	45
Improvement in Logwood .....	43	Wool Market .....	42
Indigo, Synthetic vs Vegetable for .....	40	Wool Production and Manufacture, a French Opinion .....	51
German Army Cloths .....	43	Wool Scouring, Practice and Principles of .....	36
Long Staple Cotton .....	44	Woolens of Iceland .....	37
Loss of Power by Poor Shafting .....	39	Wool, Scouring and Drying .....	39
Manufacturing Community, A .....	51		
Merino Wool .....	38		
Moths, Will it Prevent? .....	43		
New Cotton Port .....			

### BRITISH FACTORY ACT.

A new Factory Act, which went into force in England on the 1st of January, has attracted widespread attention in the textile districts which are affected by its operation. Some of its provisions will be of interest in this country, as indicating the direction which working class legislation is taking at home. The Act is very wide in its operation and imposes upon local health authorities important duties.

The hours of work for factory operatives are limited to 54 hours a week. When the Act went into force this proviso caused some friction, as the employers thought they should only pay wages for the shorter time, while the

employees demanded the same pay as before. The matter was however satisfactorily arranged.

The definition of a workshop is widened so as to include any place "where work is done permanently, and where people assemble together for work permanently of some kind or other." The kitchen of a hotel or restaurant, or even a stable, will come within this definition, and will be subject to the same supervision as a workshop. Employers of labor will twice in each year be required, under heavy penalties, to send to the local officers a list of all their workers. Wherever a woman makes a dress for the public, or a man makes a pair of trousers for profit, at their own homes, those places will have to be registered. The area of the room in which the work is done will have to be measured, and must allow cubic space of 250 feet for each worker by day, and 400 feet if employed at night. Should any infectious disease occur in a workplace, the local authority has power to prohibit any clothing to be sent to that workplace to be made for the public for a certain time. If work is sent by tailors or dress-makers to be done outside the borough the fact will have to be made known to the local officers of both boroughs. The object is that where garments of whatever class are made for public use the conditions under which they are produced shall be as healthy as possible.

Smaller buildings are exempt from providing fire escapes, but buildings in which more than forty persons are employed must be so provided.

While much attention has been paid to the sanitary conditions of places where clothing is made, bake-houses are also included in the category of factories, and provision made for their sanitary condition and inspection. In some respects Canada, and especially the province of Ontario, is in advance in this class of legislation, and some of the provisions of the Act have been in force in this country for years.

### TEXTILES AT THE ST. LOUIS FAIR.

Great prominence is to be given, as might be expected, to textiles at the coming St. Louis fair. John R. Kendrick, who was superintendent of textiles at the Louisiana Purchase Exposition, and who is to take charge of the same department at St. Louis, says that a spacious and handsome building will be erected for the special use of the

textile industries. He says further: "We aim to make the textile exhibition a live one, not a mere exhibit of manufactured articles, but a display of machinery and the process of manufacture. I will begin at once to interest textile men in Pennsylvania and New England in the exhibit. Over 315,000 square feet of space has been set aside for the textile exhibit, and the building will be the most magnificent ever set apart at an American exposition for the purpose." It is to be hoped that Canada will be well represented, even though we are shut out of the United States by high protective duties.

### A PUZZLING CONDITION IN COTTON.

The present condition of the raw cotton market is one of the most peculiar and puzzling that has ever been known. Speculators are in a quandary, and the situation for all is one of expectancy. This arises largely from the uncertainty as to the crop. But while the Government returns indicate a light crop the movement is heavy. This is contrary to the traditions of the trade. Usually in the face of a light crop, planters were only too ready to hold for better prices. The improved financial condition of the South might be expected to enable them the better to hold, and in addition the cost of storing is lower than for some years. Yet, in the face of these conditions, which might be expected to cause stagnation, the forward movement has been large. The yield in sight on February 1st was from 300,000 to 325,000 bales in excess of last year. The latest indications point however to a tightening of the movement.

### CANADA'S TRADE EXPANSION.

The annual Trade and Navigation Returns for Canada for the year ended 30th June last, were recently issued. The aggregate trade, including exports and imports was \$386,903,157, an increase of \$5,385,921 over the previous year. The total exports and imports in 1868, that is the first year after Confederation, were \$131,027,532, or a little over one-third of what they are to-day. They increased under the benefits of a low tariff and reciprocity with the United States to over \$217,000,000 in 1874. Then came a depression, which had swept over the United States for a couple of years previously, and afterwards a high protective tariff in Canada in 1879, which had the effect of reducing imports and exports, so that it was 1881 before trade returned to what it was in 1874. In 1881 it reached \$221,000,000. The year following showed a small increase, after which the business of the country again dropped, and it took 20 years to get back to \$218,000,000. In 1896 it was \$239,000,000. Each year afterwards showed a large increase, until it has now reached almost the \$400,000,000 mark. In five years, therefore, Canada's trade increased by \$152,000,000. The trade of Canada with the United States in 1873 was \$89,000,000, and in 1896 it reached \$103,000,000. During the next five years it increased rapidly, and is now in round figures

\$183,000,000. But while Canada purchases nearly \$111,000,000 from the United States, they only buy from Canada a little over \$72,000,000. Canada's sales to and purchases from the United States were both greater in 1901 than in the year 1900. In the case of Great Britain, Canada sold goods to the value of \$105,000,000, and bought from the Mother Country over \$43,000,000. Canada's total trade with Great Britain in 1873 was \$107,000,000, and in the following year \$108,000,000. It never exceeded these figures till 1898, when it was \$137,000,000. Last year it was \$148,000,000, or about \$35,000,000 less than the local trade between Canada and the United States. It will therefore be seen that of Canada's total trade of \$386,903,000, over \$331,000,000 was between the United States and Great Britain, and the balance—about \$55,000,000—was divided between all other countries. Of the other countries, Germany stands at the head of the list, with about \$9,000,000; France with about \$7,000,000, Belgium, \$6,000,000, the West Indies over \$4,000,000, China and Japan over \$3,000,000, Newfoundland nearly \$3,000,000, and South America about \$2,500,000, the balance divided among all other countries. Canada purchased from Germany over \$7,000,000 worth of goods last year, and sold to her a little over \$2,000,000 worth. From France, Canada purchased \$5,000,000 and sold \$1,500,000, from Belgium \$3,800,000 and sold \$2,800,000. The trade of the Dominion with Newfoundland is nearly all in exports. Last year there was exported to the ancient Colony \$2,260,000, and imported from it \$625,000. From South America Canada bought \$1,000,000, and sold \$1,519,000. Canada's exports to Australia grew from \$500,000 in 1896 to \$2,311,000 last year. There are little or no imports from Australia. To the West Indies Canada sold \$2,905,000, and imported \$1,801,000. The percentage of duty and the total value of goods imported, dutiable and free, was 15.28, as against 15.23 during the previous year, showing a small increase in taxation. The duty on goods entered for consumption was 16.06, as against 15.98.

The importation of woollens to Canada in 1901 was \$142,000 greater than in 1900. The woolen manufacturers are asking an increase in the duty to prevent importations from Britain. The total importations of woolen goods reached \$8,061,764 from Britain and \$1,882,341 from other countries, or a total importation of manufactured woolen goods of \$9,944,105; on which was collected in the way of custom's duties, on what came from Britain, \$1,935,420.70, and on what came from other countries \$620,915.08. The importations of unmanufactured wool were: from Great Britain 4,420,427 lbs., valued at \$540,368, and from other countries 4,154,178 lbs., valued at \$652,527.

The importation of manufactured cotton goods for the year amounted to \$6,879,876, being an increase over the previous year of \$404,471. Of these the quantity from Britain was \$4,852,332, and from other countries \$2,027,544. The duties amounted to \$1,623,610, of which those from Britain paid \$1,017,417, and those from other countries \$606,193.

**FLAX RAISING IN THE NORTH-WEST.**

The President of the Winnipeg Grain Exchange, in his recent annual address, called attention to the question of flax raising in Manitoba, some districts of which appear to be peculiarly well adapted for this crop. It has been grown in some parts of the province with great success, particularly in the Mennonite settlements.

The principal flax-producing country in the world is the Argentine republic, in South America, where the industry was commenced a little more than a hundred years ago, though it was not till within the last twenty or thirty years that it assumed considerable proportions. Our ideas of flax are usually associated with the manufacture of linen, but the Argentine flax is not available for this purpose, the dryness of the climate rendering it unfit to be so employed. It is grown solely for the seed, and as soon as this is obtained the straw is destroyed, a fact which does not prevent the profits of the crop from being very great. An average of half a ton of seed is raised to the acre, and in some cases this is actually doubled. Hence flax is one of the staple crops of the Argentine Republic, but the greater part of it is exported to the United States, where the oil is extracted and the meal fed to live stock. The exports for 1901, according to careful estimation, amounted to nearly half a million tons, which is half the entire product of the world. Not more than 20,000 tons were retained for domestic use. This will be increased as soon as the cattle breeders recognize the value of the meal, after the oil is extracted, for feeding purposes. While the seed would be valuable in the North-west, in which ranching will always be an important industry, the fibre should also be valuable, for the objection which holds in the Argentine Republic would not hold there. And in any re-adjustment of the tariff which may be contemplated in the interests of the woolen industry, a measure of protection to encourage the growth of flax in Northwestern Canada should not be overlooked.

**AN AVALANCHE OF FOREIGN GOODS.**

The *Textile World*, of Boston, is surprised at the attitude of Canada in permitting such a large importation of woolen goods, to the injury of the home woolen industry. It says:—"The per capita value of woolen goods imported yearly into Canada is more than ten times as large as imports of woolens into the United States. These heavy importations are ruining Canadian woolen mills. Following are the figures for both countries:

	Pop.	Woolen Imports	Per Capita
United States.....	76,000,000	14,220,000	18 7-10
Canada.....	5,186,990	\$ 9,800,000	\$1.89

"Our imports of woolen goods at the Canadian rate per capita would amount to \$143,640,000 per year. At high water mark under the Wilson tariff law our woolen imports reached but \$49,740,000, and yet as a result the industry was prostrate. Yet our imports, then per capita, were but a little over one-third of the present Canadian rate. How long could our woolen mills stand such an avalanche of foreign goods as is now burying the industry in Canada?"

—The prediction has often been made that the time would come when wool would sell at a lower price than cotton, and those who made it were laughed at as visionary, but the prediction has been realized. Recent Bradford advices state that United States' cotton is selling at Liverpool at 4½d. per pound, while crossbred wools are selling at 4d. Probably this is the first time that the price of cotton has exceeded that of wool.

—The important announcement is made that a deputation of English cotton manufacturers is about to visit Canada and the United States for the purpose of ascertaining the cost of manufacture and all the details of the export trade. The delegates are representatives of the East Lancashire Manufacturers' Association, which operates 300,000 looms, half the number being in England. The effect of such a visit on cotton manufacturing in this country may be very far reaching.

—The new factory act, which came into operation in England at the New Year, and which reduces the number of working hours per week, does not appear to give satisfaction. The *Textile Manufacturer* blames the employees, and says that while every feature of the act is in favor of the factory worker, whose convenience, health, leisure and freedom is promoted, the discontent comes chiefly from the side of the benefited party. Many of the workers are receiving the old rate of wages for the shortened week, yet they are not content.

—The *Maritime Merchant* has been interviewing the trade on the question of further protection to the woolen industry, and it publishes the views of three of the interviewed. A. E. Smith, of Smith Bros., says that, so far as Nova Scotia is concerned, a change is not required, because the mills there—he instances the Oxford and the Eureka—make a class of goods of a special character and do not meet with competition from foreign goods. G. A. Wordill, of Kenny & Co., says that rivalry among themselves is hurting the woolen mills of the Dominion more than foreign competition. The aim has been not to produce the best but the cheapest. Spencer R. Cossey speaks most highly of the quality of Canadian woolens, which he considers is the result of outside competition, and fears that further protection would result in a slackening of effort to produce good goods. These views are all very well in their way, and we give them in the belief that both sides should be heard; but we still adhere to the view that the woolen industry of Canada must have further protection, if it is to prosper in the face of the preferential tariff and other foreign competition.

—A deputation of manufacturers recently waited on the Minister of Customs at Ottawa, and among other things drew his attention to the system of appraisement under which job lots of imported goods are entered at an undervaluation. It was urged that if possible the true value of such imports be obtained, that they might bear their proper share of duty, to the benefit of the revenue.

The Minister was also informed that a considerable quantity of prison-made goods in the shape of hardware and wearing apparel enters Canada from the United States. The importation of these goods is prohibited, but as they are not marked in any way that would indicate their origin it is not difficult for them to escape detection. John F. Morley, of Waterloo, and S. T. Willett, of Chambly, presented an argument to the Ministers of Customs and Finance in favor of substituting a net duty of 30 per cent. on woolens, in place of the present impost of 35 per cent., which in the case of importations from Great Britain is subject to the preferential rate. They received no reply that could be construed into an assurance of tariff amendments to meet their wishes, but they were pleased with the readiness of the Ministers to hear their statements and to ascertain the facts bearing on the respective points raised.

### PRACTICE AND PRINCIPLES OF WOOL SCOURING.

The various processes used in wool scouring are based on certain principles, and the obtaining of good results depends upon the exact carrying out of these. They are sometimes neglected, however, and naturally the result of the scouring is not satisfactory. It is hardly necessary to state that all scouring methods for wool should be in harmony with the nature of the fibre. The soap is an important item. In the old days we did not employ this at all, but used various substitutes sometimes including fuller's earth, which is, in fact, always used to wash goods colored in the piece. Nowadays the wool scourer has many varieties of soaps brought to his door. Most of these soaps are undoubtedly what is claimed for them, but there are also a number of adulterated soaps. An indefinite number of recipes could be given for a wool scour soap, but as they are procurable ready for use, it would be useless to mention them. The character of the wool in process of scour necessarily governs the grade and quality of the soap. Alkalies and strong soap solutions have a tendency of felting wool, as is known. Acid, on the contrary, retards the felting of wool; alkaline salts are beneficial to wool dyeing and have no action upon the felting of the wool. The soaps used may be classed under two distinct heads, viz., soda and potash soaps. Soda soaps possess a saponifying agency, the fatty ingredients being saponified by means of caustic soda, whereas in potash soaps, the same end is produced by means of caustic potash. Caustic soda is prepared from carbonate of soda, by means of caustic lime. It is less soluble in water and less caustic than potash. Solutions of carbonate potash become more intensely alkaline and dissolve fat more readily after treatment with slaked lime. Some of the wood potashes have to be dissolved in water, which will produce a weak lye; this in turn is boiled with lime, and the clear liquor is run off. The caustic lye thus obtained is used at its regular strength, that is, part of it, the remaining part being used at the final stage of the boiling.

#### Washing.

Wool has a tendency to felt whenever it is worked too much, when the bath is boiling, or at a high temperature, and on account of these conditions the wool should not be turned too often when the scour bath is at a high degree of heat. Formerly we were accustomed to run a scouring machine at a high rate of speed, with the idea that the dirt and foreign matter would get washed out. It is now known to practical wool scourers that the wool should not be dragged, but floated, through the water or liquor. When the forks in the

wool washing machine travel fast, the wool becomes ropy and has a tendency to felt. For good work this will not do, since it is required that the wool shall be open and have a lofty look about it after being squeezed by the last pair of rolls, and the only way to get this result is to use the wool as gently as possible.

#### Concerning Uniformity.

It has been my fortune to work at a place where the wool was bought in small lots, and where buyers of the same were continually trying some one else's wool. No sooner had one lot got well into the scouring than it had run out in the wool room, and a new lot had to be started. Sometimes the new purchase looked about the same as the lot that was running, and was allowed to follow without making a distinct break, but trouble resulted in almost every case. The wool would not color evenly, nor would it make even goods in the weaving, and there was trouble all around. The difficulty was not always traced to the right place, and the dyer, the carder and everybody except the buyer was blamed for the streaky goods. A change in the wool means changing the machinery throughout the mill, running the old lot out of a machine before putting in the new. But if the changes are so frequent that this cannot be done, then the consequences fall on the goods. After our buyer had cost the mill considerable money through the need of selling the goods as seconds, he promised to stop promiscuous buying of wool. It cannot be too thoroughly impressed that buying large straight lots of wool is economy every time. It is the thought of capital lying idle that deters most mills from doing this, but if they thoroughly understood the expense of breaking off one lot that has been gotten to running satisfactorily, and taking up a new one, they would see that the interest and storage of wool does not begin to count so much against the value of having even stock. When the grade has been once fixed, there is no need to make any change in it, unless, of course, it is decidedly wrong; but do not experiment; let one lot run through and commence another.

#### Chemistry in Scouring.

It is a good plan to possess an endiometer. This instrument consists of a U-shaped tube, one side of which is graduated and closed at the end. Platinum wires are fused through the sides of the closed end, and nearly meet inside. The closed end of the tube is filled with water, oxygen and hydrogen are introduced into the closed end. The gases displace the water, while the graduated tube enables the operator to measure the amount of each. With this instrument and pencil and weight tables, one can do considerable figuring on the strength and properties of chemicals and scouring materials. With a knowledge of chemistry, the old baths can be strengthened by adding more chemicals, and thus they may be used over again. The strength of the solution should naturally be regulated by the kind of wool to be washed, each man must learn by experience what strength is best adapted for his purposes. In consequence, no hard and fast rule for determining the strength and time can be given, but he who has possession of just what a certain chemical will do can work more advantageously than the man who has little knowledge of this science.

#### Help.

As regards help, I would say that only the best workmen ought to be engaged, for the most skilled and honest men are far the cheapest in the long run, even at the wool scouring machine. I am sure that manufacturers are going to have a serious time in the near future, if they desire to hire good,

brainy men, for they are disappearing very quickly from the trade on account of the small wages that are being paid.—Exchange.

### THE U. S. SHODDY BILL.

The National Association of Wool Manufacturers of the United States, which recently held its thirty-ninth annual convention at Boston, does not look with favor upon the Grosvenor pure wool bill, familiarly known as the Shoddy Bill, a summary of which has already appeared in the Journal of Fabrics. Resolutions were adopted to the effect that the bill was a measure to place under government police surveillance many large and important branches of textile industry, which, if enacted, would be impossible of administration without placing federal police officers in charge of textile mills, wholesale clothing establishments and garment manufactories. The secretary was instructed to arrange for a hearing before the Ways and Means Committee in order that the manufacturers may have full opportunity to demonstrate the impracticability of the proposed law. It was also resolved that the wool manufacturers favor the passage of a merchandise marks act, similar to the English statute, making it a misdemeanor to sell any woolen or other goods under a false name or description, provided that such a measure can be framed as will meet the constitutional objection to all such legislation.

### BINDER TWINE.

Discussing the cost of manilla hemp and its effect on binder twine in the Northwest, The Winnipeg Commercial remarks: There has been more or less discussion for years as to the possibility of manufacturing binder twine from some material of home production. The cost of binder twine is an important item to the farmer, particularly during recent seasons of high prices for manilla hemp. If some material suitable for twine could be cheaply produced at home, it would be a great saving to our farmers, who would profit first by growing the material, and secondly by the reduction in the cost of twine. The use of flax for twine has been frequently discussed, and attempts have been made in a limited way to manufacture flax twine, but they do not appear to have been very successful. At any rate flax twine has never come into use to any extent. In the state of Wisconsin a factory has been established for the manufacture of twine from a variety of wild marsh grass. This variety of grass is found in Manitoba, and there was some movement toward undertaking the manufacture of grass twine at Winnipeg a year or so ago, but it appears to have been dropped. Now we learn from Ontario that the provincial government of that province will undertake a series of experiments with flax with a view to further testing its value for the manufacture of binder twine. An appropriation, it is said, will be asked from the legislature at this session, for carrying out the proposed experiments with flax.

### SMALL MOTORS.

F. S., writing to Fibre and Fabric, says: "I would like to hear from some practical man in regard to direct application of electricity for running looms by motors, say a motor for two looms. It seems to me that the direct application of electricity would be cheaper than shafting, hangers, pulleys and felting, though I do not pretend to know anything about the cost of either. I would like to see a weave room without any belts in it. I am not building a mill, but would like to see published in Fibre and Fabric the opinions of mill men

on this subject, so that others who may build mills can be benefited thereby." This is in line with what Mr. Souther recently said in Toronto when lecturing on Power and its Economical Transmission. He expressed a preference for a number of small motors in a factory in preference to fewer large ones.

### A COTTON PEST.

The Textile Mercury does not take much stock in the alarm raised in certain quarters about the re-appearance of a familiar cotton pest, and thinks it has been done as a pretext to advance the price of raw cotton. It says: The cotton trade on this side of the Atlantic has not heard much of the ravages of insect parasites of the plant for two or three years. Some belated news, however, is coming to hand regarding the mischief done by them during the past season. The Galveston News publishes returns which show that the boll-weevil, or boll-worm, destroyed 242,500 bales of cotton during the past season; and that 55 counties are affected by the ravages of the pest, which is on the increase. It is very strange that little or nothing was heard of this great banqueting of these insects at the time. It just looks a little like an effort to justify low-crop estimates by a plausible explanation of some portion of the deficiency. We cannot quite accept it, and would advise the trade to be slow in letting it affect their views or action.

### CANADIAN GOODS IN NEWFOUNDLAND.

The St. John's, Nfld., Trade Review says that Canadian goods are getting a firmer hold in Newfoundland every day. Among the articles mentioned as being supplied entirely by Canada and the United States are white shirts, hats, caps, fine footwear, tweeds, room paper and wool underclothing. "It is the same old story," says The Trade Review. "The Yankees and Canucks give us what we want; England only gives us what she thinks ought to suit us." To speak of only one article in the above list, the trade in room-paper is being slowly but surely absorbed by the manufacturers on this side. It is easy enough to see the reason. English manufacturers assume that poor people who can only afford to buy cheap room-papers, have no artistic sense, and the commonest patterns are sent out. When the retail price reaches 60 or 70 cents the English papers are beautiful patterns; but the Canadians pattern their cheapest grades of paper with as much taste as they do the dearer ones.

### THE WOOLENS OF ICELAND.

Cloth made from the wool gathered in the sheep pens of Iceland is the finest, softest and strongest imaginable, said Bruce D. Ryan, a member of a woolen importing house. The Iceland woolens were introduced first in England and later in the United States by a native of the icy isle, a woman who devoted her life to the improvement of the condition of her fellow women, who had never been taught anything but household duties for centuries. She secured assistance at the beginning, and built a small institution at Upernavik, where young girls are given the rudiments of an education, something their mothers never had. To support this school, the enterprise of pushing the sale of Iceland woolens was undertaken. The woman who engineered the movement had quantities of the cloth made in light and heavy weights and took it to England. She secured an interview with Queen Victoria, and interested the Sovereign of Great Britain in her humble but noble effort for the women of an almost unknown



land. This, of course, helped her greatly, but it was the intrinsic worth of the Iceland woolens which made her efforts successful and gave the movement for the education of the women of Iceland a great impetus. The cloth was taken up at once by sportsmen, as it was found to be the best known for shooting wear. Briers do not tear it, it is soft and cool in summer and warm in winter. Many of the characteristics of the woolens are due to the manner in which the wool is gathered. It would be fatal to the sheep to shear them in Iceland, and all the Iceland cloth is made from the wool which is found in the sheds wherein the poor beasts are sheltered from the arctic weather. This is of the finest possible fibre. It is cleaned, carded, and spun by the Iceland women and then woven by hand on their primitive looms.—Washington Post.

### A STRIKE ON NEW LINES.

A strike is on among the employees of the American Woollen Co. in the United States, and it came about in this wise. The company occupies much the same position as regards the woollen production as the United States Steel Company does in the steel production. It has 5,200 looms, figures which indicate the magnitude of its operations. Of these 1,400 are in four of the company's mills at Olneyville, a suburb of Providence, R.I. Recently the company decided that a considerable reduction in the cost of manufacture could be made by having every weaver look after two looms instead of one. Improvements in the looms have rendered this possible. The weavers objected, but finally came to the conclusion that the practice might be allowed on looms employed in the manufacture of clay diagonals and serges. The weavers were told that they must operate two looms on all classes of goods. It was pointed out to them that by working two looms their work might be made a little harder but the amount earned would be increased in a greater ratio. The company's proposal was in line with the policy which is enabling the United States to become a competitor in the world's markets, namely, the employment of the minimum amount of manual labor and the maximum amount of machinery. Labor in the United States has generally been willing to recognize the wisdom of this rule, and has assisted in its development. But the Olneyville weavers took the stand of the English unionists that the operation of the double loom system was not to be encouraged, as it meant the reduction of the number of hands employed, and that single loom work would become a thing of the past, for the independent mills would be compelled to follow in the footsteps of the American Company. In consequence, the double-loom workers in the Olneyville mills went on strike. With the looms idle the company concluded that it would be as well to close down. Possibly their decision was influenced by the fact that if only the weavers were idle the Textile Union would be able to put up a better fight. At any rate the mills were closed down and the Textile Union has 6,000 employees to look after.

It is said the independent mills are behind the striking weavers, and have furnished the Textile Union with information which will help them in their strike. The fight has come on at rather a bad season for the mills, as this is the time when they get out their samples for the next winter's trade. Canadian mills are interested in the outcome, for precisely the same conditions which led to the strike exist here. But the great strike of the steel workers resulted in a victory for the trust. Will the woollen strike result in the same way, and will this feature of unionism now imported into this country receive another set back?

### THE POPULARITY OF RUGS.

During the past 25 years a considerable change has been effected in the treatment and furnishing of floors. This seems a short period in which to reckon when the history of floor coverings dates from far back before the Christian era, even to the ancient days of Egyptian splendor. Prior to this time primitive ages had adopted the skins of wild beasts to make a comfortable floor in their habitations. The Babylonians were renowned for their weaving of rugs, and the ornamentation they introduced. From them the art was passed on to the Persians and the people of India, and so through Asia and Eastern Europe, and, after the Renaissance, into France and England. In this country rugs are becoming more and more in demand in place of carpets. From a hygienic standpoint they are much to be preferred.

### AN ANCIENT BILL OF SALE.

That the business men of old Egypt were just as methodical and practical in their proceedings as is the modern merchant, is demonstrated by a curious document which was recently found along with several other fragments of absorbing interest to collectors of antiquities at Oxyrhynchus. The document was drawn up in the year 54 A.D., and seems to be the record of a sale of a loom, together with the acknowledgment or receipt of price of same. Those who are familiar with the form such a document would take to-day may find it a matter of interest to compare the same with the wording of this ancient document. Here is the paper in question:

"Ammonius, son of Ammonius, to Tryphon, son of Dionysis, Greeting. I agree that I sold to you the weaver's loom belonging to me, measuring three weavers' cubits less two palms, and containing two rollers and two beams; and I acknowledge the receipt from you through the Bank of Sarapion, son of Lochus, near the serapeum of Oxyrhynchus, son of Lochus, of the price of it agreed between us, namely 20 silver drachme of the Imperic' and Ptolemaic coinage; and that I will guarantee to you the sale with every guarantee, under penalty of payment to you of the price which I have received from you, increased by half its amount and by damages; this note of hand is valid."

### WILL IT PREVENT MOTHS ?

An American inventor has devised a finishing mixture for woven fabrics which is said to resist the attacks of insects. It consists of a mixture of cedar oil, nicotine, starch and water. To impregnate 200 yards of stuff, there is used 2 lbs. cedar oil, 6 lbs. starch, 8 gallons extract of waste tobacco, and 8 gallons water. We are afraid the brown color of the tobacco water will be very objectionable in many cases, and cause finishers to avoid this mixing. The use of zinc chloride or mercury chloride would be preferable.

### PULP OUTPUT OF CANADA.

The statistical department of the Dominion Government recently sent out circulars to all the pulp mills in Canada asking for a statement of the business done in the nine months ending September 30th. The mills readily complied with the request. The returns have been tabulated, and they show that during the period named the pulp mills of Canada manufactured 242,085 tons of ground or mechanical pulp, 61,934 tons of sulphite, and 8,485 tons of soda. These had an aggregate value of \$6,700,000. Great Britain took about 58,000

tons. of the value of \$750,000. The United States took about 28,000 tons, valued at \$684,000, and other countries 1,500 tons, valued at \$32,500. The home market absorbed 124,000 tons, or some of that amount was held in stock.

### WOOL—SCOURING AND DRYING IT.

When the washing of the wool in the raw state comes to be universally regarded as a process of surpassing importance, a brighter day will have dawned for the manufacturer, finisher and consumer of woolen goods. Every lot of wool ought to be attended to with the most scientific kind of treatment possible, and then when this is done, a foundation is laid which can hardly fail to tend in the direction of valuable and profitable results. The scouring is of prime importance, as upon it depends the feel of the fabric, its color and its strength. This statement is broad and unqualified, but it is borne out abundantly by the facts of the case.

Once the wool is intelligently and carefully washed, it must then be dried and prepared for further operations. The drying is done either out-doors in the atmosphere or in closed apartments by artificial heat. It is always best if the wool can be dried out of doors. This is done almost universally in warm dry countries, as in India and in Australia, and wool so dried has certain indescribable qualities which add very much to its value and which it seems impossible to obtain by any of the known indoor processes.

Where wool is received scoured and dried, as it is from colonial sources, and also in domestic markets as well, the careful manufacturer will by no means be satisfied with such results as can be obtained by merely dyeing the scoured wool of commerce. Colors can be obtained in this way, undoubtedly, but they are not the best; and if real richness and brilliancy are desired, such as will always commend the wool to the consumer, the best plan is to scour and dry the wool before processes of manufacture are undergone, even though the wool may be a scoured wool of commerce.

Even when it is the usual custom to dry wools in the open, it is frequently necessary to resort to indoor work, for often it happens that wet spells or damp weather prevent outdoor work. The indoor dry-house is usually an apartment over the boilers, or at least near them, and the heat that is used in drying is heat that comes directly or indirectly from them. Sometimes this heat supply can be regulated and controlled, and sometimes it cannot; and just because it so frequently happens that it cannot be or is not controlled, it is very necessary that the operative in charge of this work should have the skill and caution which the importance of the place demands.

The great failing in all indoor drying is that men make the mistake of not removing the wool from the action of the heat just as soon as the moisture has all been driven out of the material. The continuance of the drying or of the heat action after the moisture has all been evaporated is a sure promise of bad work all through the manufacturing processes. Excessive heat, of course within reasonable bounds, can do little or no harm so long as it is not in contact with the wool after the moisture is all removed. The harm comes when the heat is continued after the dampness has been driven off. At this point deterioration of the fibre quality and strength at once sets in, and an impairment is sure to result which cannot help but produce bad work in the finished product. The effects of over-exposure to heat under these condi-

tions take the form of a yellowish shade or tinge on the wool, a killing of the natural lustre and brilliancy of the fibre, and a weakening of the strength and elasticity of its make-up.

The temperature that is sure to be safest, that is if the wool is removed as soon as the dampness is gone, is about 120° F. At this figure no harm can be done unless from over-exposure.

Where wool drying machines are used instead of these older machines, much time can be saved, and results for all practical purposes will be eminently satisfactory. The wool is taken immediately from the scouring machine and runs into the dryer in the wet and comes out dry, and all ready to proceed to further processes of treatment.

When the wool is to be colored, it is possible with certain colorings and certain wools to run the material right from the scouring machine into the dye vats without any intervening drying whatever. This lessens expenses and under many conditions is allowable. But, when it is done, care must be taken to be sure that the wool is perfectly free from yolk and dirt so that it can absorb the coloring matter with freedom and uniformity.

While it is possible thus to handle wool, it is also true that, as with yarn and cloth, the very best results will follow when the material is dried preparatory to the dyeing. A dried wool will take color with more uniformity than will a wet wool, and it can be done with a surer likelihood of getting always the right shade. Not only are right shades produced in this way, but brightness and life are brought about by this method too, so that the results in many cases will fully justify the extra expense of drying.

After dyeing, the color liquor is drained off and then a further drying must follow in order to prepare the wool for the next processes. This drying is subject to the same rules and cautions as the one in the case above described, and, if excess is allowed here, perhaps the dyer may not find fault, but the general results will be unsatisfactory. It is exceedingly hard to full a wool that has been overdried, and it will never take finish or produce the niceties of effect that the wool will which possesses its natural qualities. Drying at whatever stage it takes place must be watched and regulated or the results are sure to tell in deadness and dulness of color and in harshness and unnaturalness of effect.—Boston Journal of Commerce.

### A MANUFACTURING COMMUNITY.

The state of Sao Paulo, Brazil, in which many Canadians are now investing in electric railway shares, embraces quite a manufacturing community, especially in the line of cottons. Many articles are now manufactured there, and find a market to the exclusion of foreign makes. There are no fewer than 14 cotton mills within the State—three in Sorocaba, one in Tatuhy, one in Salto Ytu, one in Piracicaba, one in Jundiaby, one in Villa Americana, one in Itapetininga, and five in the city and district of Sao Paulo. All of these mills except one do their own spinning as well as weaving. They manufacture oxfords, zephyrs and plain calicoes—principally colored goods. Some have over 200 looms, and employ 300 or 400 men. The average output may be stated at 8,000 metres per day. All the mills work full time and are well managed, the heads of the various departments being practical men, brought mostly, it is said, from Lancashire. The goods manu-

factured are of very fair quality; while they are not so well finished as the imported articles, they are apparently as durable. Some of the gray goods are of fine counts. Bleaching also is performed to a small extent. The greater part of the cotton employed is obtained from Sao Paulo State. The machinery is mainly of English manufacture.

### THE RUBBER TRADE.

Meetings of the two bodies interested in the rubber boot and shoe trade were held in Toronto on January 22nd. The rubber shoe manufacturers of whom there are six firms in the Dominion held a joint meeting with the jobbers, and the annual meeting of the Rubber Boot and Shoe Jobbers' Association was also held. As a result of the joint meeting, there was drawn up a revised price list. It was stated there would be no advance in prices, but on the contrary, the tendency is towards a local scale, owing to United States competition. The rubber trust in the United States last year, in order to squeeze out competition reduced prices by about 20 per cent., and this it was expected would seriously affect prices in Canada. However, about the close of the year the trust announced an advance of about 5 per cent., which has had the effect of steadying quotations here. At the annual meeting of the Rubber Boot and Shoe Jobbers' Association of Canada, A. R. Pickett, of Montreal, the secretary, stated that owing to the organization of the jobbers into an association, the trade situation was better than for years. A. McLaren, of Toronto, was elected president, and J. A. Fullerton, of the same city, secretary.

### INDIGO SYNTHETIC VS. VEGETABLE FOR GERMAN ARMY CLOTHS.

The London Journal of the Society of Chemical Industry, in its issue of January 15th, 1902, remarks: "The clothing department of the Prussian Ministry of War has recently come to a decision which is of importance to the German chemical industry. The samples hitherto sent out to the manufacturers of the blue cloth used in the army were dyed with unpurified indigo, derived from the plant. It has been established that the German artificial indigo gives a purer and brighter shade, which is of equal fastness. The military authorities have, therefore, decided in the future to send out samples dyed exclusively with artificial indigo. Cloth manufacturers are to be allowed to work according to the old pattern for next year's delivery, in order to give them an opportunity to clear out any stock they may have of the impure product of the indigo plant."

Under this decision the manufacturers of indigo blue army cloth in Germany may now use either indigo made synthetically or vegetable indigo sufficiently purified to give the bright shade shown by the standard sample. Synthetic indigo is represented in Canada by Bellhouse, Dillon & Co., chemicals and dyestuffs, 30 St. Francois Xavier St., Montreal.

—John B. Ellison & Sons, woolen warehousemen and importers, give notice of going into business in Montreal. The firm is composed of R. B., H. H., W. R. and J. B. Ellison, of Philadelphia.

—J. W. Munro, M.L.A., has again taken up the contract for the Spanish River Pulp Co., and work is now going on. The contract was originally awarded to him, but the American engineer in charge took it out of his hands and gave it to a United States contractor, who, however, could not get on with the work.

—The Canadian Wrapper Mfg. Co., of Montreal, composed of L. Lipschitz and A. Saunders, has dissolved.

—Geo. Cleghorn, so long connected with the wholesale dry goods firm of J. G. Mackenzie & Co., Montreal, has joined the W. R. Brock Co.

—The Edinburgh Ropery and Sail Cloth Co., incorporated in Leith, Scotland, in 1887, gives notice that it is now doing business in Montreal. R. W. Aitken is its chief agent.

—The Parisian Waist and Skirt Manufacturing Co. is a new firm doing business in Montreal. It is composed of B. Myers, merchant, of St. John, N.B., and Samuel Adler, manufacturer, of Montreal.

—It is reported that John M. Hetherington, for many years head of the firm of John Hetherington & Sons, and lately chairman of directors of John Hetherington & Sons, Ltd., Manchester, England, makers of cotton spinning machinery, has resigned his position as chairman of the board of directors.

—Notice has been issued in The Canada Gazette that the Dominion Cotton Mills Co., Ltd., will apply for an amendment to their charter authorizing them to issue bonds and debentures to replace other bonds authorized in connection with their increase of capital.

—Among the important changes registered at the Tutelle office, Montreal, this month, is a notice that Dame Martha A. Hinkley Alger, widow of the late Hector Mackenzie, will carry on the wholesale dry goods business formerly conducted by her husband, under the old firm name of J. G. Mackenzie & Co.

—The annual meeting of the Merchants' Cotton Company was held in Montreal on the 11th inst. Owing to the fluctuations in the value of raw cotton during the year, the earnings did not show as favorably as in the previous year. The following were elected directors for the ensuing year: R. B. Angus, J. P. Cleghorn, James Crathern, Jonathan Hodgson, A. A. Ayer, Hon. Robert Mackay and W. G. Cheney. James Crathern was elected president and W. G. Cheney, vice-president.

—The annual meeting of the Montreal Cotton Company was held on the 11th inst., at the Montreal office of the company, 316 St. James street. The statement read was considered good in view of the depression which the cotton trade has experienced for some months past. The old officers and directors were re-elected as follows: A. F. Galt, president; Charles Garth, vice-president; directors, R. R. Stevenson, Samuel Finley, S. H. Ewing, Jacques Grenier and Hon. J. K. Ward.

—The Canadian Colored Cotton Mills Co. has placed on the market an issue of first mortgage 6 per cent. ten year bonds, amounting to \$2,000,000. to retire an issue for a similar amount, which falls due on April 2nd of this year. The property on which the bonds are a first mortgage, consisting of the real estate, mills, machinery, etc., of the company, stand on their books at \$6,044,317, and since 1892, \$1,144,317, has been spent upon it. The interest on the bonds will amount to \$120,000 a year, while the net profits for 1901 were \$328,334. The profits in 1893 were \$357,576; in 1897 they fell to \$147,876, and in 1900 they rose to \$465,428, falling off again last year to the figure stated.

## Foreign Textile Centres

**Belfast.**—The Flax Supply Association, in their last circular, say: "The imports of flax and tow for the month just closed are decreased 13.8 per cent. in quantity but only a fraction in value—0.1 per cent. Linen yarn imports are increased 30.7 per cent. and 15.9 per cent. in quantity and value respectively. The exports of linen yarn, on the other hand, are much under the average, the total quantity being decreased 26.1 per cent. The 'States' mark an increase of 34.4 per cent. As to linen piece-goods, the shipping in the month under review is more satisfactory, as there is an increase in the quantity of 5.0 per cent. and in the value of 20.3 per cent. The leading countries stand as follows: United States, 15.3 per cent.; West Indies, 0.7 per cent.; Canada, 19.6 per cent.; France, 23.9 per cent.; British East Indies, 23.7 per cent.—all increases. Against this is Australasia with 12.5 per cent., Germany with 19.8 per cent., and Brazil with 52.0 per cent.—all decreases. Linen thread is decreased in quantity 11.6 per cent., but increased in value 2.0 per cent." As for general conditions there is not much change in the linen market, which is very steady all round, with a fair volume of business. Spinning shows a moderate amount of life, but demand is not so active as a fortnight back. Prices are very stiff, and foreign sorts are quoted dearer. The manufacturing branch shows a trifling gain, orders being placed a shade better. White goods keep moving off up to averages for the time of year. Home markets are promising but cautious. The United States are doing a very fair re-order trade. Cuba is dull, prospects of tariff changes affecting demand. There are better advices from Australia, and Canada is likely to do an increasing business. The Continental demand still keeps very quiet. Brown cloth is fairly steady. Handkerchiefs are in fair request.

**Dundee.**—The market for jute is a shade easier. Good jute is still very firm, but all other sorts are 2s. 6d. to 5s. easier to buy. Jute yarn is unchanged. For common cop 1s. 3½d. is paid. Warps are 1s. 5d. to 1s. 5½d. Good yarn is 1s. 8d. to 1s. 9d. for 8-lb., and the higher-priced kinds are firmest. Heavies are unchanged in value. Hessians are unchanged in value. The finest qualities are still firmest. Ordinary Dundee hessians are difficult to sell save at a shade under 13½d. for 10½ oz. 40-in. Flax is dearer. Tows are dearer 30s. to £2 a ton. The yarn market for dry-spun flax yarn is very quiet, and it is quite impossible, spinners say, to make ends meet. Tow yarn is dearer; it would appear that the large Government contracts are for tow goods. There is also a diminished output of tow yarns, and were it not for the importation of foreign spins, the tow spinners might now get a chance of getting costs out of their tows. Fancy jute goods are firm, and the demand is adequate, taking off all the production. Twines, ropes and cords are in excellent demand.

**Leicester.**—The hosiery industry is fairly brisk; contracts for choice light fabrics are coming forward freely. The yarn market is active, with full deliveries, while prices are firm for all new contracts. Cashmere and lambs' wool yarns sell with freedom at full prices. Spinners have heavy orders on hand, and the outlook is encouraging.

**Nottingham.**—There is an average demand for curtain and heavy lace yarns; the higher counts move sluggishly. Quotations are nominally unaltered, but there is some unsteadiness, and orders are sparingly placed. Merino yarns for hosiery are firmer. Bobbin nets and plain tulles remain as before. Fancy laces and nets are in favor, and some good shipments

are being made. The fancy branches are busy in the making-up departments. Increased business is being done in lace curtains with Canada and Australia. Already many buyers are laying in larger stocks of curtains in anticipation of the demand for decorative purposes which is sure to ensue just prior to the Coronation. A moderate business is being done in hosiery. The uncertain weather is adversely affecting the sales of some classes of goods. Prices in both the cotton and wool departments are a little irregular, and orders are carefully placed. Vests and combinations are most in request, though stocks of cashmere hose have run down. Merino and cashmere half-hose are in rather more active demand.

**Kidderminster.**—Trade is fair, and generally speaking, carpet manufacturers have enough to do. The London trade, which has been slack for some time, is improving, and the demand all round is brisker. A number of orders have been received for carpets of special designs. Higher prices are asked for fine counts of worsted, but in carpet yarns all that can be said is that prices are firm, and the market is against the buyer. The pressure to sell yarn at abnormally low prices is not so great, especially for forward delivery, and the advancing price of wool has made spinners indifferent to business at bottom rates. A rise in raw material would be the best thing for the business, and the tendency is in that direction.

**Bradford.**—The firm tone is maintained in this market, but the amount of new business doing is very small. In tops there is a good turnover to cover the requirements of spinners on contracts already made, but fresh transactions are difficult to secure at the prices which spinners demand. Export merchants are trying to talk values down, having covered their needs for the immediate future, but they are not successful in inducing spinners to take lower rates. Machinery is well employed, and for the time being a waiting policy is adopted. Topmakers are firm in their attitude towards consumers, and are confident that present values will be maintained. Some are looking forward to an advance, even in the coarser classes of material. Trade in both worsted yarns and piece goods will be most benefited by rates keeping firm at about the present level, and any further advance of moment would greatly interfere with business all round. There has been very little alteration in the prices of fine merino wools or combed merino tops lately, but prices remain very firm at the advance established in the latter half of 1901. Travelers report orders good in dress fabrics. The demand for plain fabrics is still strong, and striking styles in fancy goods seem to be very little wanted.

**Manchester.**—The amount of business passing in the warehouse is not extensive, although considerable deliveries of spring goods have been effected. In the cotton market the bulls are trying to raise an alarm with a result of marked fluctuations. The indications do not, however, favor the bulls. Receipts exceed those of last year, and are likely to keep up. In the linen departments there is a quiet tone, although in the producing centres some important Government contracts have been placed. Prices are well maintained. There has been a fair American demand for damasks, towellings, ducks and other goods, and a moderate enquiry from Canada, but the home trade is very languid. Shippers have been receiving good orders of late from Natal, the revival of trade in Durban having been most remarkable.

**Leeds.**—There is a hardening tendency in the finer class of wools and yarns indicating that the superior classes of worsteds are in larger demand. Spinners are well employed, and not disposed to accept orders for forward delivery except-

ing at an advance. Wool staplers are confident that there will be no decline in values for the present. There is more animation in the trade than before the old year closed. Orders for piece-goods from stock are fairly numerous, and if they are not representing much bulk the fashionable tweeds in black and white effects are doing well, and, as is almost invariably the case with goods which have a run, they are now being produced for the lower-class trade. Rainproofs are selling freely. Close cut serges and some of the other fabrics in medium and low qualities are going into consumption in considerable parcels. The cold weather is having an inspiring effect, inasmuch as it is reducing retailers' stocks and thereby improving the conditions under which the spring trade will shortly be undertaken. Anticipations regarding the spring are hopeful, more especially in relation to the higher-class trade. As to the export business, the best of it is still with the colonies, and particularly with Canada, but there is no hope of its expansion until the war is over.

South of Scotland.—Business in the wholesale houses is beginning to move for the spring season, and many spring orders are being placed. This start is likely to be much accelerated, should the weather be dry and mild. In fancy goods there is nothing of a definite character to record. Retail buyers are waiting to see in what direction fashion is likely to turn, and whether ribbons are to be in better demand than during the last three years. The early spring shows will materially assist in this direction. Bargain hunters are still on the war-path and the sales are well patronized, the purchasers getting good return for their money. There is no activity in the wool market, but a gradual improvement is anticipated.

### THE WOOL MARKET.

The first series of Colonial Wool Sales for the year opened in London on January 21. There was a large attendance of buyers representing both the home and American trade, the majority being active purchasers. In consequence buying was spirited and competition general. The offerings consisted of 9,780 bales of good quality. Crossbreds opened 5 per cent. above the closing rates of the last series with medium and coarse grades 10 per cent. up. Cape and Natal showed an advance of 5 per cent. in the majority of instances. Crossbreds were purchased by Americans in moderate lots. On the 22nd the offering consisted of 14,096 bales. Competition was continued and prices were fully maintained. The buying was done mostly by the home and continental trade. An advance of 10 per cent. was paid by American buyers on some lots of new clip medium crossbreds. On the 23rd, 14,344 bales were offered. Competition continued keen and prices were maintained. Continental buyers were the freest operators. Full rates were paid on crossbreds by Americans. So the sales continued from day to day, the offerings being about the same each day. Towards the close prices showed a tendency to harden. The sales in detail at the close were as follows: New South Wales, 2,000 bales; scoured, 5½d to 1s. 4d.; greasy, 3½d. to 11d. Queensland, 1,300 bales; scoured, 1s. ½d. to 1s. 6d.; greasy, 4½d. to 9d. Victoria, 400 bales; scoured, 9d. to 1s. 3½d.; greasy, 3½ to 7½d. South Australia, 300 bales; greasy, 3¼d. to 9d. West Australia, 900 bales; greasy, 4½d. to 9½d. New Zealand, 5,900 bales; scoured, 3½d. to 1s. 4d.; greasy, 3d. to 9½d. Cape of Good Hope and Natal, 300 bales; scoured, 8d. to 1s. 3d.; greasy, 4¼d. to 6½d. From the opening of these sales there was a feeling of confidence, and vigorous competition was shown for merinos, which averaged 5 per cent. dearer, especially medium inferior parcels; later better grades strengthened, while the demand for inferior.

faulty grades weakened somewhat. The closing tone for these grades however, was firm. Competition for crossbreds throughout the series was more satisfactory than for a long time past. All sections, including America, were active buyers of fine-haired greasy, which improved 5 per cent. for medium, largely due to the demand from America; 15 per cent. for coarse, and 10 per cent. for scoured. Slipes were in large supply, and ruled somewhat irregular. Scoureds rose 5 per cent., and Cape of Good Hope and Natal greasies of good condition were readily taken at an advance of 5 per cent. Short heavy stock dragged somewhat, while snow white scoured towards the end of the sale hardened, at the close showing an advance of 5 per cent. The prospect for merinos is fairly satisfactory, as stocks in London and manufacturing districts reduce the minimum of old stock. The stock of crossbreds in London is practically clear. The next series will begin on March 11.

The Boston wool market has been very active. Supplies are not over abundant, and the time is forgotten when old lots were as small as they are to-day. Any such has found a purchaser at some figure or another, and the prices that have been obtained for such wools have been most satisfactory. The mills are consuming a tremendous amount of the staple, and the outlook for this large consumption continuing for some months is most encouraging. If it does continue much longer at its present pace, it will be necessary to import considerable wool in order to meet the requirements of the trade. Manufacturers are still buying to meet immediate needs only, and it does not look as if they would change this policy for some time to come. Their requirements are so heavy, however, that they keep the sales up to a very satisfactory size. Values hold firm about 43 to 45 cents, clean, being a fair basis for fine medium wools, the latter for good lots. The scoured basis for fine territory wools is about 47 to 49c., while some fancy lots are calling for 50c. Medium territory wools are quoted at 38 to 40c., with choice lines 42c. Fleece wools are firm, with sales of Ohio washed at 28½c., and choice and above Ohio, at 27½c.; No. 1 fleece are firm at 26 to 26½c., with buyers holding for 27c. It will be some time yet before any new wools will be available, and as there is no prospect of being able to import wools at any cheaper rates, consumers are disposed, when they see a lot of wool which suits them, to take hold. The wools coming in from Australia are practically all going to the mills, on the basis of present London quotations.

Canadian wool is now quoted at 28 cents in the United States, and buyers generally would do a little better than the reported rates. With the duty of 12 cents per pound, the cost of freight and packing and the ordinary profits of the trade, dealers do not feel inclined to pay more than 12 cents, washed, or 7 cents in the grease, for our local product.

In Toronto there is nothing material to report. Enquiries are coming from the United States, which is regarded as a hopeful sign, but no actual movement is reported. The market for fleece is quiet at 13c.; unwashed, 7½c. Pulled wools, 15c. for supers, 18c. to 19c. for extras.

Montreal.—We hear of some important sales in fine wools this past ten days that stocks in first hands has reduced to a very low ebb. Capes are quoted 13 to 14½c.; firm for good parcels. Canadian fleece is still quoted low, 14 to 15c., but is also firmer. The closing of the London wool sales show for fine merinos, 5 to 7½ advance, and fine crossbreds, 10 to 15% advance on previous series. The report from the woolen mills is that for next fall orders are coming in very freely, more on account of the closing down of some of our large mills, such as the Cornwall Manufacturing Co.

In Winnipeg quotations are nominal.

### A PLEA FOR TECHNICAL TRAINING.

In an interview with Dr. John H. McAden, president of the Southern Cotton Spinners' Association, he says: "I have studied the industrial problems of the South carefully, and I know of nothing that will be more conducive to our future prosperity than the technical education of our young men. Unskilled labor is to be had in plenty, but skilled labor is at a premium. One skilled man with brains is invaluable to a cotton mill, more especially if he be a Southern man who is familiar with local conditions and the peculiarities of the Southern hand. At present, although the technical schools of the South are annually graduating a number of competent young men, the supply is not sufficient to meet the demand. We need all the skilled labor we can get, and the more intelligent labor we get the better will be our products. Mr. Edmonds' idea is, I think, a good one, but the main point, according to my notion, is to inculcate in the minds of the youth of the South the fact that manual labor, or labor bordering on the manual, is not degrading. Many still cling to this absurd notion. In point of fact, there is more actual money to be made in any of the skilled technical callings for the average young man than in the law or medicine. The legal and medical fields are being overcrowded each year. We have more lawyers than the law requires, and more doctors than the general public health and welfare calls for. But we haven't enough men of education who know how to use their hands in conjunction with their brains. Just think of the vast amount of money invested in the South in cotton mills (and the industry is still in its infancy), and think of the opportunities given to a young man. Any shrewd young fellow, with a practical knowledge of the business, may, although he starts out without a cent of capital, become a partner in many of these big mills. I think if the mill men of the South will follow Mr. Edmonds' suggestion, and the young men of the South will take advantage of the opportunities given them, that the next ten years will see a revolution in the industrial aspect of the South."

### AN IMPROVEMENT ON LOGWOOD.

Hemolin SX is a preparation of logwood which has been brought out lately. It offers some advantages to dyers of every description of wool, woolen fabrics, yarns, woven cloths, hats, etc., over using of the dyewood itself, or even the extract. There is no waste or refuse wood to deal with, and it dissolves very easily in water—much easier than do the extracts. For dyeing a fine jet black shade, the wool may be mordanted with bichromate of potash and sulphuric acid in the usual way, and then dyed with 15 per cent. hemolin SX, 2 per cent. barazolin, and ¼ per cent. morin. By using hemolin SX alone, blue-black shades are obtained.

### QUEEN VICTORIA AND HOME MADE FLANNEL.

Queen Victoria had always a kindly recognition ready for the humbler forms of industry, and among these the textile ones did not escape notice. It has just been announced, says *The Textile Mercury*, that James Barnes, a handloom weaver, who was patronized by Queen Victoria, has died at Calverley, near Leeds, at the age of 77. Barnes learned his craft when he was ten years of age in a cottage at Calverley Bridge, where he eventually settled down, and ultimately acquired three hand-looms. During the latter portion of his

life he was assisted by his wife and son, the latter of whom succeeds him in the industry. Barnes wove a piece of broad-cloth for the great exhibition of 1851, but in 1806 occurred the event of his life. The Bishop of Ripon visited Calverley, and hearing from the vicar of the survival of handloom weaving, he took a specimen, saying he would show it to the Queen. He did so, and on May 25 the old man received a telegram which had been sent from Windsor to the bishop, saying Her Majesty would like thirty yards of the hand-woven flannel. Many people were anxious to follow the example of royalty, and orders for flannel came in rapidly.

### A NEW COTTON PORT.

An important announcement has just been made, says *The Textile Mercury*, which relates to Manchester and the cotton trade. At Greenock the La Porte, the first of a new line of cotton steamships, has been launched. It is a vessel of 4,000 tons, and is named after the new harbor in the Gulf of Mexico, to which it will make its first voyage. The line will be controlled by a company lately formed in London for the purpose of shipping cotton direct from La Porte, Texas, to Manchester. The harbor at La Porte lies at the head of Galveston Bay, and is a perfectly land-locked fresh-water harbor. Two features possessed by La Porte confer upon it every prospect of a great future. It is the nearest outlet for ocean freight by 120 miles to the approximate centre of the United States. It is also the nearest harbor to Houston, the railroad centre of Texas, and the point at which all the great railroad systems of the southwest converge. There can be no doubt that such a harbor will greatly facilitate the moving of freight via the Gulf of Mexico, and when it is remembered that the movement of commerce gulfwards is daily growing stronger, while the gulf port facilities are hopelessly inadequate, the importance of La Porte will be understood. The United States Government are now dredging the channel from the jetties of Galveston to La Porte, and the work is so well advanced that the harbor will be opened to the world's commerce in March next.

### LONG STAPLE COTTON.

*The Morning Post*, of Raleigh, has been giving some interesting data on cotton recently, and has the following to say of the long fibre: "Our American upland cotton is the great staple of trade, though it is by no means long fibre cotton. Only one of the six cotton fibres that figure to an important extent in the larger markets is shorter than American upland, that is the cotton of India, the mean length of whose fibre is 0.89 of an inch, while the average length of American upland is 1.02 inches. There is a great demand for long fibre cotton in all manufacturing countries and our Sea Island cotton is the longest of cotton fibres. The question is often asked why we do not raise more of this long fibre cotton in view of the great demand for it. It brings a high price and yet we produce about 140 times as much American upland as Sea Island cotton.

"There are a number of reasons for the superiority of American upland in the quantity of fibre produced. One is that the territory adapted to the cultivation of Sea Island cotton is quite limited, it being grown only on our islands and coasts particularly between Charleston and Savannah, though a considerable quantity is produced along the coast of Florida. This reason, however, is not entirely satisfactory when we bear in mind that our cotton growers are not severely taxing

the producing capacity of the Sea Island belt. In fact a considerably larger amount of Sea Island could be raised without reaching the limit of the acreage which will successfully grow this crop.

"Another reason is because cotton growers do not yet find any gin available to separate the lint from the seed by the modern cheap and rapid process without injuring the fibre. The growers of Island use the ancient roller gin, which has the great disadvantage of lack of capacity. The quantity of lint it produces in a day is very small compared with that produced by using the more recent saw gin. The result is that it is a comparatively slow and costly process to gin Sea Island cotton.

"Planters find that the application of the saw gin to the treatment of Sea Island cotton is not satisfactory because it tends to break and otherwise injure the fibre, and it is of course essential to deliver this finest of all cotton fibres to the markets without the slightest impairment of its quality. Much effort has been made to invent a gin that will combine the advantages of both machines but until recently no progress was made in this direction.

"At present, however, there is much reason to hope that the roller gin is about to be improved so as greatly to increase its capacity without detriment to the product. It is conceded that this improvement in the old roller gin, if found to be thoroughly practicable will have important economic results, for it will induce growers to plant Sea Island cotton on every acre of our land that is adapted for its production."

#### ANTHRACENE RED AND ITS APPLICATION TO WOOL DYEING.

The Society of Chemical Industry in Basle has brought on the market a red dyestuff, called Anthracene Red, which is fast to light, milling, and stoving. Trials made in the dye-house of the weaving school at Mulheim, under the direction of J. Pohl, with this coloring matter gave very satisfactory results, about which this paper deals.

1. A dyeing bath with 2 per cent. color, 3 per cent. sulphuric acid, and 6 per cent. Glauber salt, gave a shade similar to cochineal red RRR. 2. A dyeing with 2 per cent. color and 5 per cent. acetic acid gave a rather brighter dye than No. 1. 3. A dyeing with 2 per cent. color and 3 per cent. tartar gave a bright shade similar to No. 2, but the bath was not exhausted. 4. A dyeing was also made with 2 per cent. color and 10 per cent. Glauber salt, the result being a fine full shade; the dye-bath, however, was not exhausted, as in No. 3. Exactly the same result was recorded with common salt. 5. A dyeing made upon wool previously mordanted with bichromate of potash and sulphuric acid, naturally gave a duller red than in the previous cases. 6. The brightest and finest color was obtained when dyeing with 3 per cent. tin chloride and 1 per cent. sulphuric acid.

In order to ascertain how Anthracene Red behaved in combination with artificial and natural coloring matters, several trials were made with Anthracene Red, together with alizarine and aniline colors, which, as may be imagined from the foregoing indications, gave very good results.

Very interesting were the trials made with Anthracene Red in conjunction with wood extracts. These showed that Anthracene Red also dyed the material in the presence of tannin, though the dye-bath was not exhausted; by the addition of a little acetic acid at the conclusion of the dyeing, however, the bath becomes perfectly clear. Likewise, Anthracene Red, dyed in the presence of tannin and afterwards toned with green vitriol, was quite exhausted from the dye-bath. This suggested a trial with Anthracene Red and

green vitriol, the result being a shade similar to 4 per cent. tartar, 6 per cent. alum, and 4 per cent. alizarine S. Trials made with Anthracene Red, dyed in one bath with addition of alum, sulphate of alumina, and tin crystals, were not very satisfactory.

To test fastness to light, a sample dyed with Anthracene Red in a bath of 2 per cent. color, 3 per cent. sulphuric acid, and 6 per cent. Glauber salt, was exposed to light and influence of the weather for 96 days (middle October till January). The result was very favorable, the dyeing having barely shown an alteration from the original. For a milling test, some wool dyed with Anthracene Red was woven into a piece with white. The red had been dyed with 2 per cent. color, 6 per cent. Glauber salt, and 3 per cent. sulphuric acid. The piece was milled in the usual way. The red became a shade lighter, though the white after washing was found to be perfectly pure. A part of the piece was stoved, but the red was not in the slightest affected by this process. In order to observe whether this color dyed level on slubbing, it was compared with a series of other colors, none of which dyed the material easier or more level than Anthracene Red. Bleached and severely milled military cloth was dyed simultaneously with cochineal and Anthracene Red. Both dyeings did not quite penetrate the cloth, though very nearly, and when the cloth was severely milled, the color dyed quite through. All trials were made in wooden vessels. Trials made upon copper vessels gave a bricky red.

Brown, olive, drab, and mode shades can be cheaply obtained in using Anthracene Red with dyewoods. Dark brown is obtained in one bath with 2 per cent. fustic extract, 1¼ per cent. logwood extract, 1 per cent. Anthracene Red, 3 per cent. green vitriol, and 2 per cent. oxalic acid. Olive browns; with 4 per cent. fustic extract, 1½ per cent. logwood extract, ¼ per cent. Anthracene Red, and 3 per cent. green vitriol. One proceeds to first dissolve the dyewood extracts in the bath, then adding the green vitriol (iron sulphate), and sufficient oxalic acid to redissolve the precipitate which will have formed. In most cases, where the water is not too hard, the addition of 2 per cent. oxalic acid is sufficient, but in the case of very chalky water, rather more will be required. The oxalic acid is gradually added. As soon as the bath looks a clear light olive, it is ready for dyeing. An excess of oxalic should be avoided as it retards the dyeing of the dyewoods. To correct an excess of oxalic acid, ammonia can be added to the dye-bath. The dye-bath being prepared as above, viz., the liquid a clear light olive, the necessary quantity of Anthracene Red can be added, and the material may be entered. The dyeing is completed by boiling from 1 to 1¼ hours. In this bath one can also shade in any desired direction by the addition of dyewoods or Anthracene Red. A reddish-mode color may be obtained with 1 per cent. gallus, ½ per cent. fustic extract, and 1-10 per cent. Anthracene Red. Boil one-half hour, then add 1 per cent. green vitriol, and continue for another one-quarter of an hour.

In consequence of the fastness to milling, and to light, of Anthracene Red, it is very suitable for topping indigo blue. A medium shade indigo blue was topped with ¼ per cent. Anthracene Red, in an acid bath, giving a fine, full, fast navy blue. A further medium shade indigo blue was topped with ½ per cent. tannin and ¼ per cent. Anthracene Red, and after one-half hour's boiling, toned with ½ per cent. green vitriol. In this case, a deep, full navy blue was obtained, which in the overlook showed the pure indigo blue tone, whilst in the former case, where it was topped with the blue in an acid bath, the overlook was of a redder shade.

Watson, Jack & Co., of Montreal, are agents in Canada for this dyestuff.

**LOSS OF POWER BY POOR SHAFING.**

In a lecture delivered recently in Toronto, Mr. Souther, of Hartford, referred to the loss of power occasioned by improper shafting, amounting in one case he spoke of, to 80 per cent. A correspondent of Power calls attention to the same thing, and quotes an advertisement, which came under his eye, as follows:

"Wanted.—A competent mechanic to supervise and keep fine shafting and hangers in good running order and repair."

He goes on to remark on the matter in this way: The man who wrote that ad. knew his business, and has, in all probability "been there himself." The safe and continuous running of your plant depends just as much upon your shafting as upon the engine. Therefore, look after it with care and intelligence. In most plants the care of the shafting is given to the first ordinary laborer that comes handy. If you have to use ordinary labor for that kind of work, promote the gentleman at once, set him to looking after the oiling of the engine, and whatever he can do, and look after the shaft yourself. It will pay you both in experience and comfort. I know that you cannot fill all the places with first-class men. If you started out that way you would soon find out that there were not first-class men enough to go around. Engines are so well built to-day that they are much safer in the hands of ignorant men than ordinary shafting. I could philosophize quite a bit right here, and will say that I do not understand why shafting and pulley manufacturers are so far behind engine and dynamo builders in the quality and appearance of their output. You can buy an engine or an electric motor and set up either in a parlor with a carpeted floor and attend to it all that is necessary in a dress suit, without getting a drop of oil on the floor, hands or shirt front. It requires the utmost care to prevent any shafting that I ever saw from throwing oil or grease all over the "sap-works."

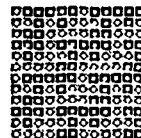
**WOOL AND PASTURE.**

Australian papers call attention to the gradual exhaustion of the pasture lands, which they connect with the great export of wool and slaughtered cattle. It has been calculated that in the period of 1893 to 1899, about 12½ million pounds of potash have been exported with the wool, and 70 million pounds of phosphate of lime with the meat exported from Australia. The abandoned farms of the New England States, where greedy farmers forced the naturally not very fertile soil to yield crops year after year without change or proper rotation, rest for a season, or supply of fertilizers, are an example of what may become of the productiveness of the seemingly inexhaustible soil of Australia, and it seems that the impoverishment of the pasture begins already to tell upon the products, as regards the quality of both wool and meat. The yolk of wool, as is known, contains quite considerable quantities of potassium salts, which it retains from the soil; if they are wanting, the wool fibre becomes harsh, dry and weak, the fleeces of the sheep become thin and hairy instead of woolly, while with a normal composition of the yolk the wool is soft and greasy, rich and strong. This continual pasturing of milch cows depletes the soil of potash salts and phosphates, which ought to be returned to the meadows, to keep them in good producing condition, in some form or other, in the proportion of the milk obtained from them. But the rich owners of lands, herds and flocks want to be richer yet. Bradford wants wool, and the people of England and other European countries want the meat which Australia can supply cheaper than they can produce it themselves. Unless a stop is

put to the constant increase in herds and flocks and the pasture lands are used in a proper rotation and partly cultivated for grain and crops that partly return their nourishment to the soil, the owners of the soil will in no distant time be ruined, and they have no Far West where they might reprieve their fortunes by beginning anew and conducting their business in a more rational way.

**TEXTILE DESIGNS.**

**FANCY CASSIMERE**



Complete Weave.  
Repeat 12 x 12.

Warp:—5,040 ends, 12-harness, straight draw, all 5½-run woolen yarn.

Dress:—  
3 ends, black  
2 ends, navy blue,  
1 end, crimson,  
3 ends, myrtle green,  
2 ends, black,  
1 end, old gold.

12 ends in repeat of pattern.

Filling:—74 picks per inch, the same counts, colors and arrangement of yarns as for warp.

Finish:—Fancy cassimere finish; 56 inches wide.

**WORSTED RIB TROUSERING.**



Complete Weave.  
Repeat 24 x 6.

Warp:—6,720 ends, 12-harness fancy draw, or 24-harness straight draw.

Reed:—13x8.

Dress:—  
7 ends, 2/56s worsted, black,  
1 end, 2/36s worsted, dark gray,  
1 end, 2/64s worsted, medium gray,  
1 end, 2/56s worsted, black,  
1 end, 2/36s worsted, dark gray,  
1 end, 2/64s worsted, medium gray,  
6 ends, 2/56s worsted, black,  
1 end, 2/64s worsted, black,  
1 end, 2/36s worsted, dark gray,  
2 ends, 2/64s worsted, medium gray,  
1 end, 2/36s worsted, dark gray,  
1 end, 2/56s worsted, black.

24 ends in repeat of pattern.

Filling:—95 picks per inch, arranged thus:  
2 picks, 2/56s worsted, black,  
1 pick, 2/36s worsted, dark gray

3 picks in repeat of pattern.

Finish:—Worsted finish; 56 inches wide.

**WATER.**

Attention is called in The Locomotive to a little appreciated circumstance, which is not unimportant in dry summer seasons. When the soil is completely saturated with moisture, the surplus rain flows off upon the surface of the soil, and this day-water contains no mineral compounds in solution, because it has not come into contact with strata of earth which contain minerals or their salts. This well-known fact is ordinarily given expression by calling the day-water soft and the well-water and spring water hard. The water that is actually used in steam boilers, consists mostly in a mixture of ground water and day water. Some parts of it have probably been at a considerable depth below the surface of the earth, while others did not get very far below or remained exposed to the air. The degree of hardness of a



water, therefore, depends upon the proportion in which day-water and ground-water are mixed, which proportion varies according to the quantity of the rainfall at different places. If the quantity of rain is considerable, the soil cannot suck up a considerable portion of it, the greater quantity of it will rather flow along upon the surface, and a feed water obtained from it (excepting deep wells) will be uncommonly soft and free from solid precipitates, as is the case of river water. If, on the contrary the rainfall is very little, the soil and ground absorb nearly every drop of water, and the conditions are reversed. For the day water very little is left, so that nearly the whole quantity sinks into the earth, and is there saturated with lime, magnesia and other mineral components. The consequence thereof is great hardness of the feed water, which causes much trouble by a hard sediment in the boiler. It becomes necessary, therefore, to blow out and clean the boilers oftener than under the ordinary conditions. Naturally it cannot be predicted how often the boiler must be emptied for this purpose, but according to the experiments of American boiler inspectors, it is advisable to open the boilers twice as often as usual. If this is not done, there is all probability that the scale accumulates upon the fire plates and these are burned or bulge out.

When now a strong rainfall occurs, so that principally day-water will be used for feeding the boilers, the contents of the latter become gradually softer, and the water loosens the hard precipitates with astonishing quickness from the valves and tubes. If then no watchfulness is applied, accumulation of boiler scale upon the fire plates is the consequence. To briefly recapitulate, in regions where the ordinary quantity of rainfall has not come down, it must be expected that the precipitations of the boiler work take place more rapidly and abundantly than in normal times, and cleansing must take place twice as often as ordinarily. But as soon as a strong rain falls, so that the water flows freely upon the surface, it may be expected that the scale in the boiler becomes loose, and that then it is advisable to soon empty the boiler, and, after cleaning, fill it afresh to avoid the fire plates being damaged and burned, which is particularly very soon the case by the water of snow-melts in the spring.

The same kind of water which gives rise to the strong formation of boiler scale must in many cases be used in dyehouses and therefore be first corrected, and yet in very dry seasons the colors do not turn out as usual. The muddy water from rivers and aqueducts is very annoying, it is true, but it can be purified by appropriate filtering arrangements, while the water from deep wells carries in itself a hidden, or not sufficiently watched danger, from which the other is entirely exempt.—*Dyers' Bulletin.*

### FLUORESCENT COLORS.

It is possible to dye effects on wool which, when viewed in bright daylight exhibit a glistening appearance that is very pleasing. These fluorescent colors, as they are called, are obtained by using a combination of dyes which dye tones of color differing in their effect on the light rays which fall upon them. The best results are obtained when silk or lustrous wool is dyed, and better still, gloria silk, for the two fibres take up the dyes in a varying degree and are really dyed in different tints, which show themselves in fluorescent colors when the fabric is seen in a piece or made up in a costume. Combinations of blue, red, and yellow give the best effects, but neither color must be strong. For blue, cyanole extra gives excellent results, as also does cyanine; among the reds

the eosines, especially fast acid eosine G, the rhodamines, and irisamine will be found the most satisfactory; while for yellow, tartrazine and fast light yellow may be used. As examples may be given pale chocolate dyed on 100 lb. wool from 1½ lb. fast acid eosine G, ¼ lb. cyanole extra, 3 oz. tartrazine, 10 lb. Glauber's salt, and 4 lb. sulphuric acid. For a gray there may be used 1¼ lb. fast acid eosine G, 13 oz. cyanole extra, ¾ oz. tartrazine, 10 lb. Glauber's salt, and 2 lb. sulphuric acid. The colorist will know how to dye other shades from these three dyes

### AMERICAN COTTON INDUSTRY.

Interesting information as to the growth of the cotton industry of the United States is furnished by advance statistics issued from the National Census Office. Unfortunately, these figures do not give the number of spindles in operation in 1900, so that one very important detail is at present lacking. The number of establishments, however, is shown to have increased from 905 in 1890 to 1,051 in 1900, a gain of 16.1 per cent. The total wages paid by American cotton mills have increased from \$66,000,000 to \$90,000,000, a gain of 36.9 per cent. The cost of materials used has increased from \$155,000,000 to \$176,500,000, a gain of 14 per cent. The value of the product is shown to have grown from \$268,000,000 in 1890 to \$337,000,000 in 1900, a gain of 25 per cent.

This increase in the value of the product, important as it is, does not accurately indicate the development of the industry. In the last ten years there has been a gradual scaling down of the cost of production, and the prices of all classes of cotton fabrics are to-day much lower than they were in 1890, the decline averaging from one-half cent to one cent per year. Taking this fact into consideration, it is safe to estimate the gain at nearer 50 per cent. than 25 per cent.—*Dry Goods Economist.*

### AN AMERICAN ON SHADED PIECE DYED KNIT GOODS.

I have repeatedly observed goods knit so tightly as almost to be devoid of elasticity, not alone at the heel and toe sections, but even along the legs all the way or in bars at distances apart. Such goods when colored would be shaded well still in the dyer's hands. No ordinary cleansing process would take the dirt out where so firmly held packed in among the fibres, and material to be properly colored must first be bereft of grease and gum and foreign substances. There is no remedy for these grayish partially dyed places. The goods must be redyed some dark shade. The hosiery already en route must all be inspected and the damaged portions separated from the rest, if possible.

Spots of all sizes result from oil droppings at the knitting and seaming tables. When with the oil is mingled metallic dust worn from bearings, a formidable compound is deposited upon the fabric, which is anything but easy to remove, particularly when the goods have been in stock for some time previous to being sent to the dyehouse. I have known of cases where a stocking would occasionally be made use of by some thoughtless knitter to wipe off his machine or oil can.

A line of knit goods I have in the past dyed largely was known about the mills as "tubing." I refer to those lengths of seamless bag-like pieces made on large machines a foot or more in diameter, intended to be cut up and tailored into boys' sailor suits, top-shirts, underwear, etc. While working with these long pieces I have experienced the same trouble on account of bad knitting and droppings of oil. Indeed

these are imperfections common to every class of knitted work, unless most carefully guarded against.

It is positively necessary for the dyer to protest against all these little things; and he must not be called "an everlasting kicker" when he does. In a well regulated mill the great bulk of his kicking should be forestalled. There should invariably be some system of examining and sorting out defective pieces of the kind I have noted, before sending out the work, in order that the dyer may have the spoiled ones by themselves to treat as they demand. Why not? Witness the systematic labor and care spent upon the "examining" of yarns in any large and successful worsted mill to-day. In the dyer's room there are not facilities for doing the job. Finally allow me to impress upon dyehouse hands the great desirability of clean floors; and upon the knitters the detrimental influence on clean, bright, even shades that the practice of tossing about hosiery, etc., on their floors very often has. Although they must ultimately be cleansed, they should not be besmeared in order to make work.

A noticeable and not infrequent cause of unevenness is the use of dyes that are not suited to the work. Dyes that may be well adapted to the dyeing of loose stock, may on the other hand, when applied to the dyeing of pieces, prove failures so far as level colors are concerned. The property of dyeing evenly is essential for dyes used in piece coloring. I know of a hosiery manufacturer that tried to use a nice looking aniline marine blue on cashmere stockings. It would not dye the heels and toes like the rest of the hose, and portions of these were not fully penetrated. The body of hose in some instances was spotted also at intervals. I found that the blue dye was a mixture of violet, green and claret anilines possessing little affinity for each other, and consequently unable to work altogether. The dyer lost his situation over the miserable stuff. The number of such mixed dyes to-day is legion, and dyers need to be chary of them. If a mixed lot is suspected, it can sometimes be detected by dusting a very small quantity of it into a glass of clean water, and watching the ingredients dissolve as they descend; this, however, does not answer in all cases.

In colors that are first mordanted, clouds and streaks occasionally develop. These are caused either by entering the pieces into a bath much too hot for safety, or else by bringing them too quickly to boiling point. To pitch a batch of loose stock into a boiling chrome bath, for example, is quite another matter from trying to start piece goods of any description after the same fashion. Begin moderately cool, and work a while to even up, before turning the steam on. Keep in motion while the temperature is rising, and the danger point is past. If the pieces at any time should seem to mordant unevenly, try to level them by prolonged gentle boiling and the addition of lactic acid or Glauber's salt, or both. Don't attempt to take them to the finishing bath while any uncertainty exists about the bottom. Many colors are now-a-days mordanted on top of the dye. In such a case ascertain that the goods are fully levelled before adding the fixing chemicals, for afterwards will be too late.

I am reminded that clouds of a bronzy character are at times to be met with in navy blue or black dyed wholly or in part with logwood or its extracts. While the extract and handling are sometimes at fault, I have found that this mischief could be generally overcome by chroming the goods in the mordant bath. This is especially important when working pieces made of shoddy and similar material. It is very important to have the right sort of utensils to work with. A bad workman is said to always quarrel with his tools, but for all that it is not to be supposed that it pays to deprive any

kind of a workman of whatever he ought to have for the prosecution of his labor. Certainly not.

As to washing machinery, I have nothing to say against laundry washers or dolly machines, nevertheless, give me the good old-fashioned "kicker stocks," having crank motion overhead, and an intelligent man accustomed to their use. A rinse box is a very useful adjunct. The stocks can be used to best advantage in washing hose, socks, overstockings, lumbermen's felted boots, and certain classes of underwear and sweaters. The proper way to wash tubing is in a regular woolen mill washer such as is used for clothes; such goods cannot be scoured well in the stocks or by any other method. If the tubing is to be fulled to such an extent that it cannot well be done in scouring alone, then put the goods first into the stocks, and felt them there most carefully in the grease for a short time. Finally take them out and run them with hot water in the cloth washer. It is likely no further addition of soap will be needed to cleanse them besides what is left in them from stock fulling, but if required do not scruple to add more. Then thoroughly rinse them in warm water. If scoured in the "kickers," they will be unevenly felted, and clean only in places.

The main points to be noted in regard to boiling out cotton work for dyeing are complete and continued saturation and thorough cleanliness in handling. The same remark applies to bleaching these goods for light shades. Quite a large trade is done in coloring cotton tubing to be manufactured into underwear, jerseys and other articles of apparel. Care should always be exercised in seeing that all the rolls belonging to one batch of pieces are treated together in boiling out and bleaching, otherwise difference in shade may result. For the same reason let the different "strings" or lengths of tubing prepared for coloring be as nearly as practicable of the same length, so that every string may share alike in number of revolutions in all the baths and alternate air exposures.

For dyeing hosiery of all kinds the usual rotary machinery of various types may be used. The old-fashioned open tubs give good results. They should not be too deep, otherwise blotches and clouds will appear. The tubs should flare out wider at the top than at the bottom. There is such an all-around advantage in the wide mouth and narrowing body that it will pay to build them in this way. It is a good thing to finish off the top of the tub staves all around with a  $\frac{3}{4}$  inch light rounded brass circle, cast in segments, and firmly and smoothly fastened down. This adds much to the life and utility of the kettle, and occasionally saves goods from injury through being crushed under a pole on the irregular tub rim.

The dimensions of a small tub of this build to contain about one hundred pounds of hosiery would be as follows: Make it of sound  $2\frac{1}{2}$ -inch pine, spruce, or the like; 4 feet in diameter at the bottom,  $4\frac{1}{2}$  feet wide at the top; staves, four feet long over all with four good rods or flat hoops, preferably with tension screws. Four or five inches above the bottom inside, place a perforated copper false bottom, resting on two pieces of scantling each about  $2\frac{1}{4}$  feet long attached to the real bottom. Cut out these pieces on the under side at intervals to allow of free circulation of the steam and hot water when in use. Have the outer edge of the false bottom rest solidly upon a rim made of upright narrow blocks of inch lumber nailed around the tub inside.—Textile World

A new set of Smith cards have been installed at the Brodie Mills at Streetsville, which will now make the plant a five set one. This concern has been running night and day, and is quite busy.

### ARTIFICIAL GERMAN DYES.

Picric acid may be considered as the first artificially prepared organic dye; although known for some time, it was not used for coloring purposes until about 1845. In 1835, Runge in Berlin discovered aniline, and in 1845 Hofmann benzol in coal-tar. In 1835, Mitscherlich discovered nitro-benzol, and Zinin showed, in 1841, that it could be converted into aniline by reducing agents. Mansfield, working in Hofmann's laboratory, devised a process for the production of benzol from coal tar on a large scale, and by this means rendered the production of large quantities of aniline by way of benzol and nitro-benzol possible, as aniline itself only occurs in coal tar in very small quantities. These chemists may be considered to have laid the foundation of the German aniline dye industry. The discoveries of the various colors then commenced, and have now run far into the thousands. All these artificial dyes, and many more, came to join the ranks of the natural dyes without displacing them from their position. In 1868, however, Graebe and Liebermann dealt the deathblow to dyes prepared from the madder-root by their discovery of the preparation of the artificial alizarine colors from the anthracene contained in coal tar. In France alone the cultivation of the madder-root, estimated at an annual value of £1,700,000, was consequently abandoned. The red color is still used for the uniforms of the French infantry, but it is now almost exclusively manufactured in Germany. Of the world's annual production of alizarine in 1890, amounting to about 25,000 tons, Germany alone contributed about 22,000 tons, and the total value of the manufacture of organic dyes in Germany in 1898 may be estimated at £6,000,000.

The discovery of a practical process of preparing artificial indigo has made Germany an indigo exporting country. Should experiments now going on prove successful, a further blow will have been dealt to the Indian indigo industry, which is, unfortunately, already on the decline. The area under cultivation in Bengal decreased by 33,000 acres from 1898-99 and the price of natural indigo has fallen about 20 per cent. In 1899 the export of indigo from India amounted to 5,192,672 rs. In 1900 it was 2,785,627 rs., showing a decrease for 1900 of 2,407,045 rs. It is greatly to be feared that natural indigo will share the fate of the madder dyes after the discovery of the process of artificial alizarine. The following figures show what the probable result will be: In 1886, Germany imported 1,036 tons of indigo; in 1891, 710 tons; in 1898, 118 tons; and in 1899 import practically ceased, and Germany exported 256 tons. A further triumph of organic chemical research work has been the discovery and manufacture of artificial perfumes, principally by German chemists.—Kuhlow's German Trade Review.

### THE ST. JOHN COTTON MILLS.

The Cornwall and York Cotton Mills, at St. John, N.B., have now 425 names on the pay roll, and will have 500 by the time the spring opens. Quite a number of families, who left the city after the mills closed, have returned, and more are coming. The York mill is now running at night, and everything about both mills is working smoothly. Finished goods are being shipped every day, and there is an excellent demand for them. It is the intention to manufacture the best goods of their class, and it is probable that before long their product will bear a distinct brand. Those already sent out are giving satisfaction.

The mills being in full operation, application has been made to the city council to carry out the arrangement for

exemption for ten years, for water rates up to \$2,000, and to have written off all taxes and rates overdue. In appearing before a committee of the council for this purpose, Col. Jones made a statement of the present position, and prospects of the mills. He said the company had been formed, the charter obtained, \$240,000 worth of stock subscribed for what is equivalent to \$400,000 at par. The company had paid Mr. Robertson for the property and the deeds had been made out in the company's name. Both mills are now operating as many machines as is possible with the help already employed, and more are being added daily. The wage roll amounts to \$2,000 per week. Out of 428 looms in the mills there are 317 in operation. The daily output is 15,000 yards of manufactured cloth. Every operative that can be engaged is secured at once. Experienced hands are in demand. A feature of the operation of the mills is that all the stock was subscribed by local people. Not a dollar is owned outside the city. Consequently, if the mills earn a dividend, every dollar will go to St. John men.

When in full operation, the mills will employ between 500 and 600 hands, and will distribute on an average \$3,000 per week in wages. At present the mills' prospects for success are splendid, and he had every confidence that the enterprise would come up to the most sanguine expectations.

### COTTON MANUFACTURES OF THE WORLD.

It is estimated that the number of cotton spindles in the world is 106,534,000, distributed as follows:

Great Britain .....	45,500,000
United States .....	20,058,000
Germany .....	8,000,000
France .....	5,500,000
East India .....	4,700,000
Austria .....	3,200,000
Spain .....	2,650,000
Italy .....	2,100,000
Switzerland .....	1,700,000
Japan .....	1,350,000
Belgium .....	950,000
China .....	565,000
Canada .....	550,000
Sweden and Norway .....	550,000
Mexico .....	491,000
Holland .....	290,000
Portugal .....	230,000
Greece .....	100,000

### TRANSMISSION OF POWER.

By the various methods of transmitting power usually employed, an intermediate in the shape of a rope or belt is employed. The transmission of power is effected directly from one pulley to the other by means of friction pulleys, and as the name indicates, this is effected by friction which is created by pressing the surface of the pulleys together.

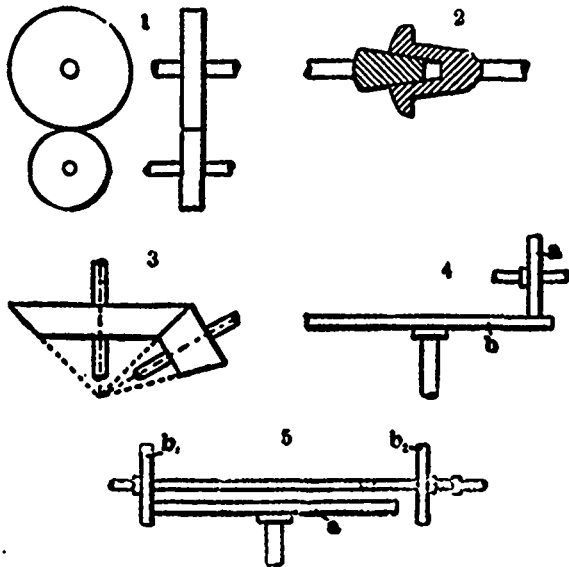
The amount of power that can be transmitted depends upon the pressure and the frictional co-efficient. The amount of pressure required is calculated by dividing the power, (P); by the frictional co-efficient. This last named factor depends upon the material from which the pulley is made; for iron with iron is 2/10; for wood with iron, 25/100; wood with wood, 5/10; iron with leather, 1/4.

The simplest arrangement of friction pulleys is where the shafts are parallel with each other, and the friction pulleys can be of cylindrical form, as shown at No. 1, or cone shaped,

as shown at No. 2. The last one has the advantage over the former, in that much greater power is transmitted in proportion to the pressure applied.

If the shafts are at an angle with each other, as shown at No. 3, the profile of the pulleys may be cone-shaped.

No. 4 shows an arrangement by which the speed of the driven pulley, (b), can be changed by altering the position of the driver, (a). The nearer the pulley, (a), is to the centre of the pulley, (b), the faster the latter will move.



By the arrangement shown at No. 5, the direction in which the driven pulley, (a), revolves, can be quickly changed by moving the driving shaft so as to bring either the driver, (b'), or (b''), in contact with (a). Such an arrangement is convenient for operating presses, as the direction of the screw shaft to which the pulley, (a), is attached, can be easily changed, and the press plate raised or lowered accordingly.

The use of such friction pulleys finds but a subordinate place in power transmission, as compared with rope and belt drives; they are employed for only small quantities of power.

Gears are extensively used for transmitting power directly from one shaft to the other, such as the spur gears when the shafts are parallel to each other, and bevelled gears varying according to the inclination of the shafts. Speed of the pulley driven either by gears or friction pulleys is calculated in the same way as when driven by belts or ropes.

**REGISTERING DEVICE FOR LOOMS.**

The purpose of the device is to register the amount of cloth woven, being placed in such a position on the loom as to permit ready consulting without interfering with the work of the weaver, the clockwork of the affair being sunk into the breast beam of the loom.

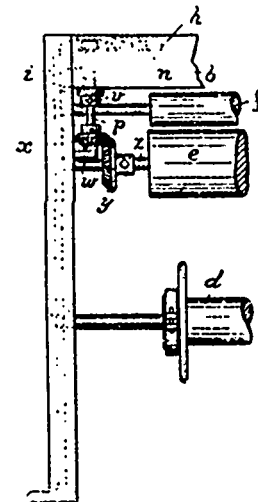
The accompanying illustration is a front elevation of that part of a loom to which the device is adjusted.

Letters of references in the illustration indicate thus: d the cloth roll, e the take-up roll, and i an auxiliary guide roller placed between the breast beam and take-up roll. The fabric as it is woven passes over the breast beam, down under and around the take-up roll, over and around the guide roller f, and on to the cloth roll d.

**Description of the Clock Mechanism.**

In the upper face of one end of the breast beam b is formed a recess or cavity h, with which at one end communi-

cates an orifice i, which extends vertically through the breast beam. In this recess h is disposed a pair of gears, one of them carrying a rigid pinion which meshes with the teeth of the other gear journaled on a screw which penetrates a sleeve n, upon which said gear rests. In said cavity is also arranged another pinion mounted on the upper end of a shaft p which extends through the orifice i. The upper end of the shaft p carries a pointer adapted to register on a circular index.



How the Clock is Driven.

On the shaft p is secured below and in approximate contact with the breast beam a thrust collar v. The shaft p is stepped in a bracket w projecting from the loom frame, and it carries at its lower end one of two bevel gears, x, the other of which y is secured on the shaft z or the take-up roll e. Through the medium of the bevel gearing the shaft p is rotated to operate the indicator of the clock mechanism as the cloth is woven.

**GAUGE OF SPINDLES ON WOOLEN MULES.**

The above subject is of much importance to woolen manufacturers and to those who have to do with the spinning of woolen yarn. Having run a large number of spindles for many years the gauge of spindles on these mules being only 1 1/2 to 16 inches, and having been an advocate of a wider gauge, I might be asked what width of gauge I would consider to be about right. To this question I would say 2 1/4 inches, and more in preference to less. The benefits of a wide gauge are many; the building of large bobbins, the less number of knots at the spooler, the dresser and the loom. Next, and not by any means the least, is the avoidance of so many caught ends and waste that the narrow gauge mule is subject to. Much of this waste and broken threads are soon covered up and goes to make trouble at the spooler, and often I have been surprised to see how much of it would go through to the dresser. Next we have the double thread, which is made by one thread breaking and catching on the next spindle and twisting off at the ro's. This double thread is wound on and is often never seen again until it makes its appearance on the finishing room perch. On mules of the narrow gauge type spinning yarns of 1 to 4 runs a very large per cent. of the broken threads will catch on the next bobbin, and for this alone it will pay to use the wide gauge mule, even if you do have a few less spindles and have to get new spools and change your spool stands in front of the cards.—Fibre and Fabric.

### SISAL FIBRE CULTIVATION IN INDIA.

It appears that there is now every prospect of the production of sisal fibre having a trial in Assam, and as very little appears to be known about it, a few facts with regard to the industry may be of interest. The average price realized for the fibre on the London market during the last fourteen years was £28 per ton, the period including times both of depressed and of booming prices. The fluctuations were due to the general inferiority of the machinery, which caused fibre of variable quality to be turned out; and to the intermittent supply of the fibre, which caused it to be influenced by the Manila market. Large areas, however, have lately been opened up in Yucatan and the Bahamas, and it is now the general opinion of fibre experts at home that with a constant supply and the enormously-increased demand for this fibre all over the world, and especially in the United States of America, the price will remain firm between £25 and £30 a ton for many years to come.

Until very lately the extraction of the fibre was effected by crude and wasteful methods, which broke the fibre and usually turned it out in a weak and discolored state. Within the last few years, however, Spain and America have produced new automatic machinery which turns it out uninjured and in beautiful condition. In Yucatan the fibre is produced for about a penny a pound, or less than £10 a ton, so there is very little to wonder at in the fact that some 300 square miles have been taken up for its cultivation, and that the export last year was nearly half-a-million bales, and is increasing year by year. In the Bahamas the cost appears to be greater, and properly-cleaned fibre cannot at present be placed on the London market from these Islands for less than £15 per ton. It is probable that the prices of labor in the two countries account for this difference. The Germans in East Africa have several million agave plants put out, but they appear to be using the Mauritius variety (*fourroyea gigantia*) more than the sisal. This is probably the case only by reason of the reluctance of the Central American and British Colonial Governments to allow the sale of sisal bulbs for export.

A larger proportion of fibre is found in the leaf of the sisal plant than in that of any other agave, and it also commands a higher price than the Mauritius or any other variety. In the Bahamas and in Yucatan the plants are usually spaced 5½ ft. apart, giving 840 plants and yielding half-a-ton of the cleaned fibre to the acre. As the weight of the dry fibre after decortication is only 3½ to 4 per cent. of the weight of the green leaf, very efficient transport arrangements are a feature of these plantations, and ropeways, mono-rails, and light railroads are very generally utilized. The plants appear to require very little attention, they luxuriate in the very poorest of soils, are absolutely impervious to drought, and two hoeings in the year is the sum of the attention they require. The leaves are ready for cutting when the plant reaches its third year, and each plant yields sufficient ripe leaves for the production of about 1½ lbs. of dry fibre yearly, for about five years, after which it throws up a pole, produces its seed, and then dies, yielding up its place to a sucker or secondary plant, of which a large number appear around the parent plant during its career. The cultivation of agaves on a large scale has been started in Mysore and in Bombay, but the superiority of the sisal over all the other varieties has unfortunately not been fully appreciated, and the inferior varieties have been utilized.

There is a small plantation of the sisal agave on the Dauracherra estate in the Sylhet district of Assam, from which a consignment which was recently sent to England realized over £36 per ton. This fibre was cleaned by one of the old-fash-

ioned rough scutching machines, so that the sale should give every encouragement to those who propose opening-out with modern machinery on a large scale. With the cheapest land and labor in the world, and the increasing demand for all classes of fibres in this country and elsewhere, it seems, says the Calcutta Capital, more than probable that this industry will command serious attention in the near future.—Textile Manufacturer.

### THE COTTON GOODS TRADE WITH CHINA.

The statistical secretary of the Chinese Maritime Customs, in his report on the trade of China for last year, reviews the progress and broad general movements of the trade of the country for the decade ending with 1900. The events of last year and their injurious effect on trade naturally disturb comparisons between the opening and closing years of the period, and, therefore, for the purpose of totals it will be more convenient to take 1899. The statistics of the annual imports of some of the principal articles show that, with some exceptions, the trade in cotton piece-goods has been almost stationary and in some items has even declined. American drills, jeans and sheetings have increased considerably; cotton flannel (chiefly American) and cotton lastings are evidently increasing in favor; English shirtings, T-cloths, drills, jeans and sheetings have made no headway. Japanese cotton goods seem likely to find an enlarged market; English cotton yarn has not progressed, while Indian and Japanese yarns have advanced rapidly. The imports of woolen goods and metals are not growing; those of aniline dyes have gradually increased, while those of soap grow larger every year. The report states that, as regards heavy cotton manufactures, the growth in American goods at the expense of the British is natural and must be expected to continue. "Indeed it is remarkable that the Lancashire goods have held their own so well, and the fact is possibly to be explained by the conservatism of the Chinese, who are slow to adopt a new 'chop.' The rapid growth of the cotton weaving industry in America has resulted in a production in excess of domestic requirements, and America has become an exporter under favorable conditions. Proximity to China, cheaper freights, and the evident advantage of using indigenous cotton, are all factors which will contribute to the future expansion of the American trade. In fancy cotton goods, such as lastings, Lancashire can hold its own, as these goods are mostly manufactured from Egyptian cotton. English cotton yarn cannot be expected to make progress in the Chinese market against the competition of the Indian, Japanese and local mills. The demand is for low counts; and while the principal business of the English mills is in high count yarns, the mills of India, China and Japan are provided with machinery specially arranged to meet the demand for coarse yarns in the Eastern markets." In 1890 the total value of the foreign imports was, roughly, 134½ million taels, and in 1899, 281 millions; but if the amounts are given in sterling at the average rates of exchange for the respective years, the imports of 1890 were valued at 35 millions sterling, those of 1899 at 42½ millions, and no year between the two reached the figures of 1890. But there are various reasons why sterling values—though better than local currency for comparison—are not wholly accurate for the purpose, and the report admits that there has been an increase of imports; the Chinese are gradually purchasing more foreign goods, and they are demanding a better class of cotton goods; but the figures show that owing to defective means of communication and the cost of carriage, each port supplies only a restricted area. When the population of each such area is satisfied, trade stands still;

when railways are built there will be a great advance, not only because goods will penetrate further, but because much of the capital used in construction will be spent by the Chinese on foreign goods, to be paid for eventually by exports. Nearly every article of export shows an increase during the decade. Hemp, mats and wool are all increasing; but silk does not show a healthy expansion, and is not likely to do so unless the disease among the worms is taken in hand. As to the trade of last year, the report notes that, where a disastrous commercial panic with heavy failures might naturally have been expected, the year, commercially speaking, may be described as a fairly good, though anxious one. Trade was so brisk in the first six months and revived so strongly towards the close that, contrary to all expectations, business was up to the average. "Whatever changes may result from the events of 1890, whatever readjustments may take place in the share of the trade taken by each country, it may be confidently expected that the foreign commerce of China, as a whole, will continue the expansion which was so marked in 1889." Our readers will regard the fulfilment of this optimistic forecast with much satisfaction.—Textile Mercury.

### WOOL PRODUCTION AND MANUFACTURE. A FRENCH OPINION.

M. Henri Pupin has recently published an article in the *Debats* (Paris) under the above title, which contains matter of interest to the wool trade. After deducing from statistics of late years that the production in wool-raising countries such as the Argentine Republic and Australia is sensibly declining, M. Pupin states that the price of wool is less influenced by this decrease than by the respective rank of fine qualities and crossbred varieties. He says: "Now, more than ever, the line is drawn between the two kinds, so different in their origin, in mode of manufacture and final use. The dominant note in the history of wool has been the rising demand, during a period of three consecutive years, for fine grades, in face of steadily decreasing production. The reasons for this decrease have long been known. After the low prices paid in 1894 and 1895, stock growers limited their production of fine grades and gave attention to common breeds which were more remunerative. Cheviots at that date being in as great demand as merinos, they found greater advantage in raising breeds that served as food, were more hardy and more prolific. Since then, if the flocks did not increase in numbers, the yield in fine wool necessarily became less, as the merino sheep gives birth to but one lamb yearly, while the cross-breeds produce two during the same period. This explains the dearth of fine wools to-day: the taste for fine grades seems so firmly established that only the best cross-bred wools find a market. It is not likely that there will be a great increase in merino sheep in the near future, as at least eight years of crossing the blood are necessary to re-establish the merino type." After alluding to the wool crisis of last year, M. Pupin continues as follows: "The manufacturing outlook is favorable; figures of the amount of goods manufactured since the beginning of the year testify to activity, and without doubt the low price of raw materials and the needs of consumers will bring about a prosperous season, if narrow methods be abandoned. From this time on the scarcity in fine wools will be felt, as it is undeniable that the situation in fine wool is more strained than in 1888, when the relative scarcity brought about the alarmingly high prices of 1890." He concludes by remarking that, under existing conditions and with present prospects, there are not many ways out of the difficulty. The dying out of merino sheep without attempt to replace them,

and the consequent decrease in fine wools, will necessarily increase the demands for high grades until impossible prices will turn popular attention to common grades, for which there is no call at present.

### MERINO WOOL.

A treatise on the merino, by Thomas Shaw, first published in 1849, has just been reissued in New South Wales by the Review Printing Co., of Sydney. In 1849 Mr. Shaw was a purchaser and a salesman in the employment of J. T. Simes, a London woolbroker. He had been some five years in Australia when he wrote his treatise, and had been engaged in sorting and other operations. His views on the condition of the industry at that time were very pessimistic, remarks the *Sydney Mail* in a notice of the reissued work. He found that the men who held the country were, for the most part, inexperienced in wool growing, and very difficult to teach. When a wool which they believed to be inferior realized a superior price the growers assumed that the buyers had made a mistake, and when wools which the growers considered to be the very best went low in the market the trade was said to be more at fault than before. The writer strongly urged the production of fine merino wools, but was doubtful if the Australians would be able to draw level with the Germans. In one chapter he states that Australia had defeated Spanish clothing, combining the qualities of both. He wrote, "To many it will appear a hopeless task to compete with the Germans, possessed as they are of perfect skill and perfect stock to work upon, but it will only be until they consider that our noble climate, and that alone, has raised the colonies to the position they now occupy. In 1826 there were about 200,000 sheep in the colony of New South Wales, including Port Phillip, yielding 552,960 lbs. of wool. In 1848 there were about 12,000,000 of sheep, producing 24,000,000 lbs. weight of wool. To effect this every ewe has been bred from, where sold or boiled down it has been by the flock. The country has done everything, but selection has been utterly neglected, and, as if that was not enough, the exertions of the settlers were for years devoted to the introduction of coarse sheep—in direct opposition to the nature of the country." Mr. Shaw's last paragraph was, "If we act as we have done it will be a struggle for bare subsistence, if we exert skill equal to the capabilities of the colony, the price will be in our own hands, for we will not only supply the English market, but have all the consumers of fine wool in the world for our customers."

### SILK INDUSTRY IN FLORENCE.

The silk industry was once one of the most important industries of the province of Florence (Italy), and is one of the oldest, having been in existence as early as 1204. It reached its greatest development and reputation in 1474, when Florence counted 84 manufacturing establishments. Richly and exquisitely finished gold and silk stuffs and silver brocades of every color were manufactured and exported to Lyons, Geneva, Spain, Sicily, Turkey, Syria, and even to the United Kingdom and Germany. It is a fact worthy of remark that silkworms were not introduced into Tuscany before the end of the fifteenth century and that up to that date the raw material was imported from abroad.

—The publishers of the *Journal of Fabrics* would like to have everyone employed in or about a mill send facts about themselves or their friends, but especially about new mills, new machinery, etc., that will be of interest to those in the business. Send us all the news you can each month.

## 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 head office of the Canada Woolen Mills will, it is rumored, be removed from Toronto to Hespeler.

Charbonneau & Monteford, of Galetta, are installing in their factory machinery for the manufacture of cloth of double width.

The Montmorency yarn mill at Montmorency Falls, Que., is now running a double shift of hands in order to catch up with orders on hand.

The Algoma Pioneer is informed that a company of moneyed men are negotiating with Soo real estate dealers for a site upon which to build a bobbin and spool factory.

J. E. Fuller has leased the T. P. Pearce Company's woolen mill at Marmora, and will have it ready by 1st May, when he will go into carding, spinning and manufacturing.

The Dominion Cotton Mills at Halifax have 518 looms, and are making a fine class of shirtings. The mill is running 60 hours a week. Wm. Wilson, the manager, has been with the company ten years.

Two thousand hands in the Dominion Cotton Co.'s mills at Montreal were laid off recently on account of a fire in the Montreal Heat & Power Co.'s works, from which the power to run the mills is obtained.

A pulp mill is being erected by the James MacLaren Co. at Buckingham, Que., which will have a capacity of about 75 tons per day of ground wood pulp. D. G. Mills, who has been connected with the management of two pulp mills at Sault Ste Marie, will have charge of the new mill.

The Merchants' Cotton Co. has decided not to pay the usual half-yearly dividend. They have been paying four per cent. half yearly. The stock fell rapidly in consequence of this announcement, but it had gone down previously on rumors that the dividend would be passed. There is comparatively little business done in the stock, however, owing to it being largely in investment hands.

The Galt Carpet Co., Ltd., has been incorporated with a capital of \$40,000 divided into eight hundred shares of \$50 each, of which six hundred shares shall be preference shares; for the purpose of manufacturing and selling carpets, art-squares, rugs, rug and upholstery-fringes, upholstery-goods, carriage-ropes and dusters and horse-nets. The incorporators are: H. H. Burrows, F. A. Cull, Richard Young, Elizabeth Cull and R. A. McGillivray, Guelph, and Percy F. Fitch, of St. Thomas.

The report of the Minister of Justice for last year just issued, states that the twine factory at Kingston penitentiary has given employment to about 40 convicts, for whom it would be hard to find other work. The inspector says that from the date of its commencement its success has been rendered difficult by the persistent misrepresentations of the twine by a number of manufacturers and importers, whose efforts to obtain larger prices have been frustrated by its operation.

The Lablanche River Pulp and Paper Co., having secured water power from the Ontario and Quebec Governments will erect a large mill near Mattawa, to be completed in about a year.

The York cotton mill at St. John, N.B., was damaged by the storm of February 2, the upper part of the south end being blown in, making a gap 60 by 40 feet.

Frank Falls is selling agent in the Maritime Provinces for the Cornwall and York Cotton Mills Co., Ltd., of St. John. J. Sproul Smith remains the new company's representative for Toronto and Western Ontario cities, and David Kay, of Montreal, for province of Quebec, Ottawa and Kingston.

The overseers and tradesmen of the Dominion Cotton Mills branch at Magog held their tenth annual drive and dinner at Ayer's Flats, a few days since. The drive, dinner and programme was pronounced by all who have been present at past drives and dinners to be the best that they ever attended. The number of guests was 42.

The stockholders of the St. Hyacinthe Canadian Woolen Mills at their annual meeting re-elected the following officers: James G. Cannon, president; Hermann H. Wolff, vice-president; J. Laframboise, secretary and treasurer; M. Boas, managing director. They report a very successful year, and have even brighter prospects for the future, as the mills are forced to run day and night to fill the large number of orders on hand.

### FABRIC ITEMS.

The Custom Cutters' Association of America, which has been in session at Milwaukee, is to meet in Hamilton next year.

W. R. Johnston & Co., wholesale clothing manufacturers, of Toronto, have been incorporated as a joint stock company, with a capital of \$750,000.

Sisal fibre advanced 1/4c. per pound recently in United States markets as a result of scarcity of stocks. United States manufacturers of binder twine are reluctant to quote prices for next season's business, nor are buyers anxious to buy.

An agitation against the high turn-down collar is said to have been worked up by the New York manufacturers. So much more linen is required to make this style of collar that it seriously reduces their profits and they wish to see it go out of fashion.

At the annual meeting of the Dominion Sheep Breeders' Association, held in Toronto in January, it was decided to send a special agent to the Northwest to open up a trade in thoroughbred sheep similar to that already so profitable in cattle.

Regarding the American cotton crop Colonel Shepperson, compiler of the well-known hand-book of cotton statistics, entitled "Cotton Facts," estimates in the new issue that the crop will be 10,500,000 bales, and that the world's requirements of American cotton will be 10,700,000 bales, so that the demand will be beyond the supply.

William Gregory, late Governor of the State of Rhode Island, whose death is announced, was engaged in woolen manufacturing. When 15 years old he entered a factory, and at 19 became superintendent of a woolen mill. He filled many important business appointments in succession, until finally he became the owner of a mill.

The Executive Committee of the Toronto Branch of the Canadian Manufacturers' Association, has decided to petition the legislature for the exemption from taxation of machinery and plant. The memorial will point out the several disadvantages that manufacturers labor under, owing to a tax on machinery, and will urge for exemption as a protection to the manufacturer. If not granted, there is a possibility that Ontario may lose some of its industries.

A by-law to assist in the establishment of felt works carried at New Hamburg by a vote of 136 yeas to 12 nays.

Two eastern Canada cotton mills give notice of an advance in gray and bleached ducks. Orders in these lines are brisk.

Mrs. Rachel Wolfe, a mantle-maker and furrier, of Toronto, has failed. She offered 30 cents on the dollar on liabilities of over \$18,000, with assets of over \$7,000, principally stock, but the offer was not accepted.

Among the persons who are supplying pulp wood to the Canada Paper Co. at Windsor Mills, says *Le Progrès*, is a woman, who brings a load each day, loading and unloading the wagon and driving the horses herself.

The Richard Co., Montreal, has applied for incorporation with a capital of \$99,000, to manufacture boots, shoes, clothing, hats, caps, etc. The applicants include J. A. Richard and Alfred Prendergast, Montreal, and Eugene Richard, Winnipeg.

The value of the exports of cotton cloth and yarn from England are seventeen times greater than those of the United States. Great Britain exports manufactured cottons worth nearly \$8,000,000 more than the exports of raw cotton from the United States.

A Quebec charter has been granted to the Crown Laundry Company, with a capital of \$10,000; headquarters at Montreal, to do general laundry work. The charter members are: W. S. Richardson, James McNab, William Geraghty, W. H. Henry, of Westmount, and W. M. Reid and A. W. Adams, of Montreal.

George B. Fraser, of S. Greenshields, Son & Co., is to be the new representative of the Montreal Wholesale Dry Goods Association on the council of the Montreal Board of Trade. An effort is being made by the new president, A. W. D. Howell, to secure a larger attendance at the meetings of the association.

Wickett & Craig, Ltd., is a new company of tanners and glove manufacturers formed under an Ontario charter, to take over and carry on the business of Bickell & Wickett, Toronto. Its authorized capital is \$250,000. J. S. Lovell, Wm. Bain, E. W. McNeill, Robt. Gowans and R. Richardson form the company.

P. Simons, merchant tailor, Peterboro, met with a severe loss on February 2nd. The building adjoining had been gutted by fire some time ago, and a gale blew down a wall which overtopped Simons' shop, a three-story one, breaking through the roof and floors, and carrying his stock and furniture in a confused heap to the cellar.

The wholesale millinery stock of J. M. Hamilton & Sons, Toronto, was destroyed by fire on January 29th, involving a loss of about \$30,000, with an insurance of \$27,000. The building was very little damaged, but a millinery stock is probably one of the most perishable known in a fire. Most of the damage in this case was done by water and smoke.

Joseph Horsfall, manager of the Montreal Woolen Mills Company, who has returned from a visit to some of the large woolen mills in Yorkshire, says it is a great mistake to imagine that the bottom is falling out of the woolen industry in Great Britain. On the contrary, the industry is in a most flourishing condition, and holding its own against the world. The preferential clause of the Canadian tariff enables the Yorkshire manufacturer to dump his wares into Canada whenever it pleases him. It bears pretty heavily now, but when a lull comes in the woolen manufacturing trade of England, the Yorkshire mills will dump their surplus manufactures into Canada in such a volume as to be disastrous in the extreme.

B. J. McCulloch, who for a number of years has been in charge of the tailoring department of T. A. Garland & Co., at Portage la Prairie, has purchased the business.

The Cosmos Cotton Co. is applying for incorporation, with a capital of \$500,000. Geo. Burgay, of Yarmouth, N. S., is solicitor for the applicants.

The merchant tailors' section of the Toronto Retail Dealers' Association, at their annual meeting, passed a resolution protesting against any increase in the duty on woolens.

The Royal Hat and Cap Manufacturing Co., Montreal, of which Rose Simon, wife of Moses Wetstein, is the registered owner, is in trouble, and Wetstein is reported to have disappeared in consequence of complications with the customs authorities. This is the second failure in ten years.

The Winnipeg dry goods house of Robinson & Co. is applying for incorporation under the name of Robinson & Co., Ltd., with a capital of \$250,000. The applicants are, Jerry Robinson, George Robinson, John W. Little, W. M. LePage, W. P. Moss, T. H. Slater and W. H. Moss.

Danford Roche & Co., large general dry goods merchants at Newmarket, are in financial difficulties, and are offering their creditors 50 cents on the dollar, on time. The liabilities are placed at \$60,000, with assets nominally \$70,000. The principal creditors are in Montreal. The firm at one time had several branches in Ontario, among others one at Brantford.

It is the opinion of manufacturers that business is gradually growing on distinctively Canadian lines. Much of the prejudice that once existed in favor of imported goods has been overcome. Canadians are more largely recognizing the merits of the domestic article. Friezes and homespuns of Canadian make are selling better than ever and the same is applicable to many other lines.

Walter Anderson, temporary liquidator in the winding-up of the Calder Clothing Co.'s business, has been appointed permanent liquidator by the Master-in-Chancery. W. G. E. Boyd was the nominee of most of the stockholders. The statement shows assets, \$13,000, and liabilities, \$15,026. Some of the stockholders have taken proceedings to have their stock cancelled, on the ground that they were not properly informed as to the nature of the business when they subscribed.

Marshall, Field & Co., the well known dry goods house of Chicago, etc., did a business last year in excess of \$50,000,000. They manufacture a large proportion of the dry goods they sell, and have factories in England, Scotland, Ireland, France, Italy, Spain, Germany, Austria, Russia, China, Japan and India. Their woollen mills furnish a local market for the Australian wool grower, and the revolution of their spindles in South America keeps pace with the political turnovers in that land of revolutions.

The *Globe* of recent date remarks that there is a merry war going on between two eastern domestic mills to secure business in printed goods. Values of certain lines of prints made by these two mills are 10 to 15 per cent. lower than they were a year ago. In some lines the goods can be secured lower than when raw cotton was obtainable at 5½¢. It is thought that the market for print goods in Canada now is as low as it can well go, even with the two mills referred to engaged in such a keen fight for the trade. The feeling in regard to prices is that if they show any change in the near future it must be in the upward direction. Practically no American prints have been sold so far this season in the Canadian markets. The cutting in prices makes it impossible to sell them in Canada except at a loss.



Fancy silk piece goods are going to be popular this year.

Cotton mills in the United States are busy, as a rule, but uncertainty as to the future of the raw material tends to unsettle prices.

Millinery openings are announced for March 3. An attempt is expected to introduce radical changes of style. The ready to wear hat is expected to be in favor.

Some United States manufacturers of white goods have advanced their prices 20 per cent., and the whole position of the market is decidedly strong.

The Eastman Machine Co., Ltd., has been incorporated at Toronto, to manufacture the Eastman cloth cutting machine. Its capital is \$30,000, and the incorporators are: G. P. Eastman, W. A. Mills and F. H. Hurlburt.

When the order was given recently to the W. E. Sandford Mfg. Co., of Hamilton, for 2,000 suits of uniform for the South African Contingent, the cloth had not been made. A mill at Lanark manufactured it with all speed, and as fast as it was received it was made into clothing.

In a dispute which has arisen between the Royal tailors and the women clothing tailors of Chicago, and in which 350 of the latter have been locked out, the women took to picket duty, and stood around the contractors' shops, appealing to their sisters not to take their pieces. They proved to be active pickets.

The Hamilton, Berkinshaw Company, Ltd., has been incorporated under the laws of Ontario to manufacture, buy, sell and deal in shirts, collars, cuffs, and other garments and clothing, gentlemen's furnishings and dry goods. The head office is in Toronto, the capital is \$40,000, and the persons incorporated are: John H. Hamilton, William H. Berkinshaw, A. G. Hamilton and T. and G. H. Kilmer, Toronto, and W. T. Miller, Kingston.

## Personal

William Kilmer, formerly of the Merriton cotton mills, died in Toronto, January 14.

James Moodie, of the Eagle Knitting Company, Hamilton, has gone for an extended tour to the Holy Land, and the chief European countries.

R. F. L. Walker, who received his business training with the W. R. Brock Co., wholesale dry goods, Toronto, and went to Tacoma four years ago, is dead.

C. A. Michie, who has been identified with the Grange farm, near Hespeler, has entered the shipping department of the Forbes Woolen Mills Co. in that town.

N. Haystead, who has been a cutter with F. Cockshutt, of Brantford, for the past year, on the eve of leaving for Toronto, was presented by his fellow employees with a traveling case.

James Dougherty, chief of the fire department at Carleton Place, who died recently, was for some time superintendent of the machinery in the Gillies woolen mills at Carleton Place, a position from which he retired about a year ago.

James Jackson, who for many years was the general manager of the Dominion Cotton Mills Company, died at Oakville, Ont., on February 4. Mr. Jackson was one of the most successful manufacturers in the country, and being of a frank and genial nature, leaves many friends to mourn his loss.

Geo. Pattinson, woolen manufacturer, has been re-elected by acclamation, a member of the Preston town council. He was elected in January, but had to vacate the seat on a technicality.

W. J. Wallace, who was some years ago engaged in the woolen industry at Fallbrook, Ont., is now proprietor of a general store in Souris, and is prospering beyond his most sanguine expectations. He and his daughter have just been on a visit to the old home.

David Cram, who had been book-keeper at the Gillies woolen mills at Carleton Place for twenty years, till compelled by ill-health to resign last August, died on the 2nd of February. He took an active interest in whatever tended to promote the welfare of the town, and had been councillor, deputy reeve, reeve and mayor. He was a man much respected.

## THE FLORENTINE WOOLEN INDUSTRY.

From time immemorial the Tuscan shepherd and his flocks, have led a nomadic life and passed the summer in the Apennines and the winter in the Maremma, the sheep living in the open air at all times. There are no large proprietors of sheep, a flock of some importance yielding approximately only (say) 3,000 kilos. (6,614 lbs.) of wool. It would be impossible to calculate on an average the total quantity of wool produced in the province of Florence, as the yield is subject to great variations, owing to the climatic conditions of the region, and to the diseases among the sheep. Moreover, the production is constantly tending to diminution in consequence of the increased tilling and cultivation of land in the Maremma. Many attempts have been made to improve the breed of sheep, but these have all been given up, as the effect of crossing was lost in a short time and no permanent improvement obtained. However, Tuscan wool is said to be strong and long, and therefore suitable for the manufacture of ordinary cloth for durability and especially for military clothing. The wool gathered in the province is consumed for the greatest part at Prato. For fine tissues large quantities are imported from North Italy, Australia, and Russia, and especially America. The woolen industry is carried out chiefly in the commune of Prato, where numerous spinning, weaving and carding mills are worked, making large use of "shappe"—the wool obtained by unweaving old tissues, undoing the twist, and rendering the woolen fibres free by separating them from each other. Mention may be made of the following important mills: A. and G. di Beniaino Forti, with three engines of 70 horse-power, 2,000 spindles and 300 hands. Kossler, Mayer and Kingler (exclusively a weaving mill), with 1,328 hands, five engines and 300 jacquards; produces ladies' woolen stuffs (of combed wool), wool tissues mixed with silk or cotton, cashmeres, tibets, meltons, paramattas, etc. L. Targetti's spinning and weaving mill; 140 hands, three engines, of a total of 80 horse-power, 1,200 spindles, 20 jacquards, and other machinery. Signor F. Cavaciocchi; 1,500 spindles, 14 jacquards, 50 hand-loomis, one hydraulic engine of 70 horse-power, and a gas motor of 2 horse-power, 200 hands. Sig. C. Villorossi and Son; 1,000 spindles, 24 jacquards, 50 horse-power steam engine; 140 hands. There are many other smaller mills spread throughout the province. The total number of hands employed in the woolen industry in the province, including the firms already mentioned, is 3,270, the greater part being males.

**WANTED**—A GOOD SECOND HAND SET of 38 inch Davis & Furber Cards with D. & F. mule to follow.  
MORDEN WOOLEN MILLS, MORDEN, MAN.

# ENGLISH CARD CLOTHING

Full Stock on Hand.

SPRINGFIELD MILLS, CLECKHEATON.

ESTABLISHED 1820.

Large Buyers will be astonished at the prices we can give  
you on CARD CLOTHING.

Quality of our goods excelled by none, regardless of cost.

HIGH GRADE  
"GENUINE OAK"  
ENGLISH TANNED

LEATHER BELTING

*I GUARANTEE*

More Solid Leather to the Foot than any Belt made.

The Largest Individual Mill Order was Filled  
Satisfactorily by Us.

MILL SUPPLIES OF EVERY DESCRIPTION.

D. K. McLAREN,

88 Bay Street, Toronto.

751 Craig Street, Montreal.

**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:

- Loom Fixing; a handbook for loom fixers working on plain and fancy worsteds and woolens; containing chapters on shuttles and bobbins, and their management; head motion; putting in warps; filling; adjusting and starting new looms; chain building, etc.; 104 pages, by Albert Ainley .....\$1 00
- Technology of Textile Design; explains the designing for all kinds of fabrics executed on the harness loom, by E. A. Posselt ..... 5 00
- Structure of Fibers, Yarns and Fabrics, the most important work on the structure of cotton, wool, silk, flax, carding, combing, drawing and spinning, as well as calculations for the manufacture of textile fabrics, by E. A. Posselt ..... 5 00
- Textile Machinery Relating to Weaving, the first work of consequence ever published on the construction of modern power looms, by E. A. Posselt..... 3 00
- The Jacquard Machine Analyzed and Explained; explains the various Jacquard machines in use, the tying up of Jacquard harness, card stamping and lacing, and how to make Jacquard designs, by E. A. Posselt..... 3 00
- Textile Calculations; a complete guide to calculations relating to the construction of all kinds of yarns and fabrics, the analysis of cloth, etc., by E. A. Posselt.. 2 00
- Wool Dyeing; an up-to-date book on the subject, by E. A. Posselt ..... 2 00
- 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

**CHEMICALS AND DYESTUFFS.**

There has been more enquiries during last two weeks for all lines for delivery on opening of navigation. Soda Ash has advanced 10s. per ton in England. Bluestone is firm:

Bleaching powder .....	\$ 2 75	to \$ 3 00
Bicarb. soda .....	2 00	to 2 05
Sal soda .....	0 75	to 0 80
Carbolic acid, 1 lb. bottles.....	0 50	to 0 60
Caustic soda, 60° .....	2 35	to 2 60
Caustic soda, 70° .....	2 60	to 2 85
Chlorate of potash .....	0 13	to 0 15
Alum .....	1 35	to 1 50
Copperas .....	0 65	to 0 70
Sulphur flour .....	2 00	to 2 50
Sulphur roll .....	2 00	to 3 00
Sulphate of copper .....	6 00	to 6 25
White sugar of lead .....	0 08	to 0 08
Rich. potash .....	0 11	to 0 12
Sumac, Sicily, per ton .....	75 00	to 80 00
Soda ash, 48° to 58° .....	1 30	to 1 40
Chip logwood .....	1 90	to 2 00
Castor oil .....	0 09	to 0 10
Cocanut oil .....	0 10	to 0 11

**NEW BLACK FOR COTTON**



**DOUBLE STRENGTH**

Unequaled for depth of shade. Users of black should investigate. Fastest Black on the market.

**F. E. ATTEAUX AND CO.  
BOSTON.**

**CANADIAN BRANCHES:**

53 Colborne Street, TORONTO | 13 Lemoyne Street, MONTREAL

**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.**

Milnsbridge Chemical Works, near HUDDERSFIELD, ENGLAND.

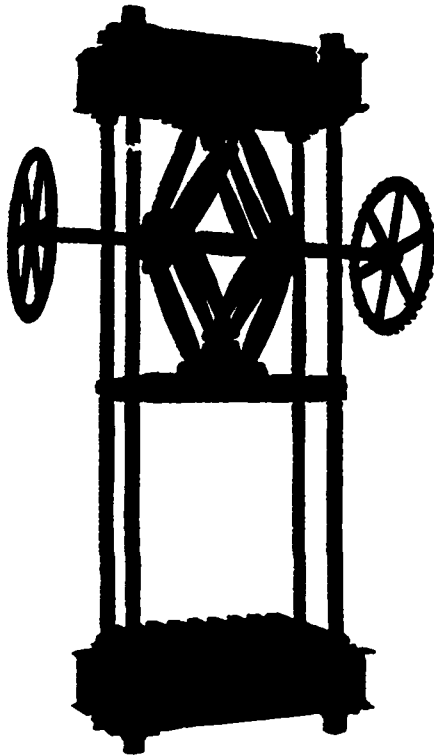
**PHENYLENE DIAMINE (DISTILLED)**  
**TOLUYLENE DIAMINE (DISTILLED)**

**Bismarck Brown, Chrysoidine,** Crystals and Powder. Largest makers in the world.  
**Soluble Blues**—all shades.  
**Binitro Benzol and Binitro Toluol.**  
**Reduced Indigo. Wood & Leather Stains.**  
**Ortho-Nitro-Toluol & Para-Nitro-Toluol**  
Specialties for Cotton, Wool and Silk Dyers, Paper Makers, etc.

—A serious accident took place at a Belfast spinning mill recently. Without any warning one of the walls gave way, and the three floors, with the machinery and workers, were precipitated to the basement. Twenty women and girls were killed, and some thirty more or less injured. The mill, known as the Smithfield, was an old one.

—Notwithstanding the fact that the United States is in possession of the Philippine Islands and have been for some time, British capital and British merchants have possession of its principal producing industry, the manila hemp industry. All efforts by Americans to dislodge them have been unavailing.

## BALING PRESS



Send for our Catalogue of Presses.  
**WILLIAM R. PERRIN & COMPANY, TORONTO, Ont.**

## Canadian Colored ..... Cotton Mills Company.

Cottonades,	Zephyrs,
Tickings,	Skirtings,
Denims,	Dress Goods,
Awnings,	Lawns,
Shirtings,	Crinkles,
Flannelettes,	Cotton Blankets,
Ginghams,	Angolas,
Yarns, etc.	

WHOLESALE TRADE ONLY SUPPLIED.

## D. Morrice, Sons & Co.

Agents,  
 Montreal and Toronto.

Sole Agents for the  
 Hamilton Cotton Co.'s  
**WARPS**

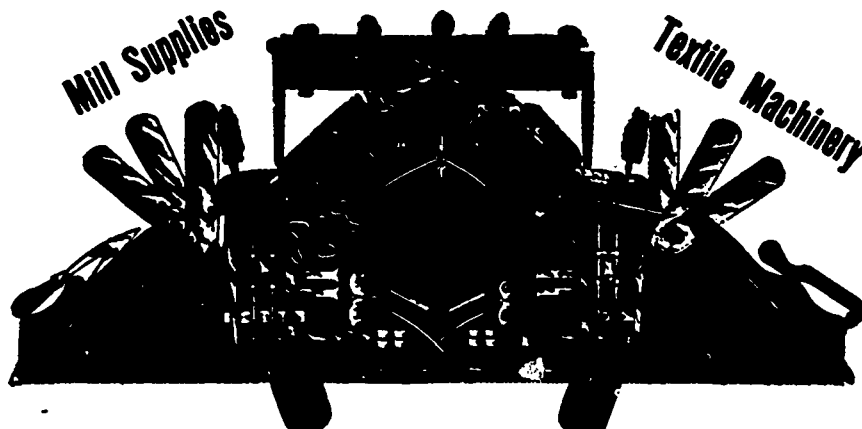
Samuel Law & Sons  
 English  
**CARD  
 CLOTHING**

Henry F. Cockill & Sons  
 Clotherton, Eng.  
 "Stretchless" and  
 "Special Alpha"  
 Leather Belting,  
 Lark Belting for  
 Dynamos, Condenser  
 Leather Aprons.

Large Quantities Carried in  
 Stock.

Office—11 & 13 Front E.  
 Warerooms—138 Esplanade E.  
 (Foot of Jarvis St.)

## GEORGE REID & COMPANY, WOOL



Francis Wiley & Co.  
 Bradford, Eng.  
**WOOLS**

James Smith  
 Woolen Machinery Co.

Carding  
 Spinning  
 Woolwashing  
 Ginning  
 Picking  
 Drying  
 Baling  
 Cleaning  
 and . . .  
 Finishing  
 Machinery

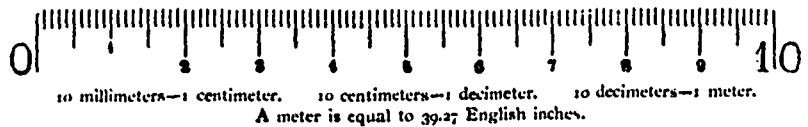
Valuations made on  
 Application.

# TORONTO

Telephone, Main 3591

# GET IT IN . . . . SHORT METER!

This is a Decimeter, or One-tenth of a Meter.



The Metric System of weights and measures will soon be introduced into Canada and the United States. You will, therefore, find it a useful study. Its principles can be learned in ten minutes. In the metric system every measure, whether of volume, capacity, length or area, is related to the meter, and is based on our decimal system of notation. To show its simplicity the whole system of weights and measures is explained on a single chart, 40 x 14 inches, containing diagrams of the actual sizes of the fundamental weights and measures. This chart will be mailed post-paid to any address in the world on receipt of 10 cents. Address

**BIGGAR, SAMUEL & CO., 62 Church St., Toronto, or Fraser Building, Montreal**

## Opinions of the Press

### CHART OF THE METRIC SYSTEM.

The publishers have received many letters complimenting them on the issue of the popular Chart of the Metric System of weights and measures. The following are a few sample opinions:

I have very much pleasure in seeing you step to the aid of those pressing the Metric System to the front. I shall be glad to call the attention of teachers to your chart. The Metric System has for a number of years—since I came into office—been taught in all the schools of the province; and the metric measures are those called for in the returns from all our high schools—dimensions of school rooms, etc. I have much pleasure in sending you a few copies of my brochure on the "Three Great Reforms," in which it will be seen that for a number of years I had been an advocate of the system—even in the conservative city of Toronto. Wishing you much success.—A. H. Mackay, Superintendent of Education, Nova Scotia.

I am in receipt of your favor of the 7th ult., together with a copy of The Canadian Engineer for June, and a specimen of the Chart of the Metric System prepared by your firm. I am very pleased to read your article, but I wish particularly to compliment you on the chart. It is, I believe, the best I have seen for explaining briefly the principles of the Metric System. It will afford my committee much pleasure to hear of this awakening interest in Canada. Australia too is showing a growing disposition to adopt Decimal Coinage and Metric Weights and Measures, and here we keep gaining a step month by month.—E. Johnson, Secretary Decimal Association, London, Eng.

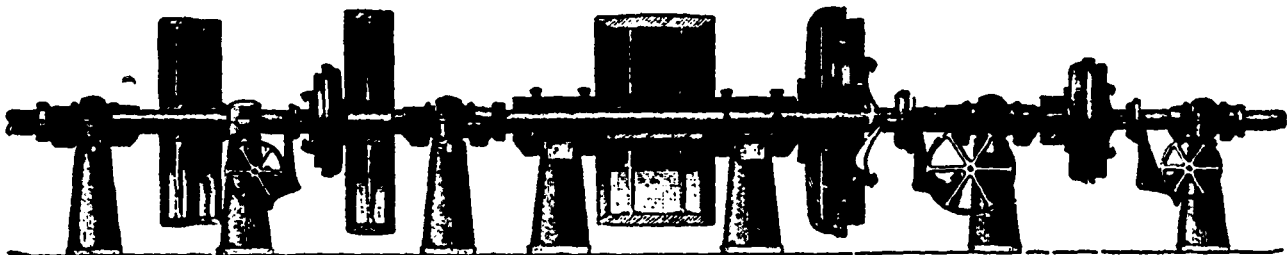
We see that you, too, advocate the general adoption of the Metric System of weights and measures, and we believe that as much as possible everywhere the same means should be employed to accomplish the desired aim. The widest possible distribution of your chart would no doubt be a good step forward. We request you therefore to forward to us two copies

for our office and for the library of the American Society of Dyers.—L. M. Carriat, Philadelphia.

The Monetary Times has a review of your Chart of the Metric System. I notice the price is stated at ten cents per copy, but if you have any other more expensive editions printed, I should be glad to receive a copy or two; as it is my intention to frame a copy (if possible), and present it to the library of the society of which I am an associate, viz., the Incorporated Accountants (Eng.). It is high time that British traders and accountants awoke to the necessity of adopting decimal coinage and measures. Enclosed please find \$1 (Canadian), to cover your expenses for as many copies as the remittance will pay for. Trusting you will be able to assist our efforts on this side to foster "intercolonial and home-country" trade, and lessen the tide of German competition, which is a danger to all the English-speaking countries, if Germany gets the upper hand (both politically and socially), and assuring you of the awakening of the British to their surrounding dangers of subsidized continental competition.—E. Woodroffe, 121 Stapleton Hall Road, Stroud Green, London, England.

Please accept my thanks for the Metric System Charts. The adoption of the Metric System must shortly take place, as everything is to be said for it and next to nothing against it. As to the chart, I consider it is a valuable one, and one which every progressive citizen ought to have in his home. The mass of information, which it explains, is handled in such a simple manner that anybody can understand it without becoming in the least confused as to the use of the different terms, which is the only drawback, that I know of, to the Metric System. There is no doubt though that, if the system were adopted, the terms would be abbreviated to suit the rapid business methods this side of the Atlantic. I expect that a number of people, to whom I have shown the chart, will be calling upon you for copies of it ere long, as they have already expressed intentions of doing so.—Dermot McEvoy, Mechanical Engineer.

## POWER TRANSMISSION MACHINERY. ( COMPLETE OUTFITS.



**DODGE MANUFACTURING COMPANY, TORONTO, CAN.**

SEND FOR 86 CATALOGUE FOR 1901

**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 OLDHAM, ENGLAND.

BY FAR THE LARGEST MAKERS OF TEXTILE MACHINERY IN THE WORLD

Platt's Cotton, Woolen and Worsted Machinery.  
Sole makers of Brown's Patent Carding Rollers for wool—  
give woolen yarn a worsted appearance.  
New Patent Noble Comb—increased production, better  
work.  
Platt's Special Machinery for making English and French  
Worsted Yarns.  
Platt's Special Machinery for making Cotton Waste into  
Yarns.

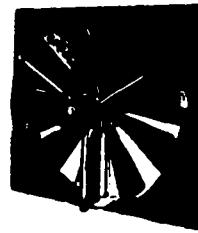
Also Sole Agent for U. S. and Canada for

**Messrs. MATHER & PLATT**

Salford Iron Works, Manchester, England.

Bleaching, Dyeing and Finishing Machinery and Archbutt-  
Deeley System of Softening and Purifying Hard Water.  
The Best System on the Market.

Wool Washing and Drying Machines. Garnett Machines. French  
and English Napping Machines. Card Clothing for Cotton (Sykes's).  
Woolen and Worsted (Critchley's). Varey's Fallers and Circles, etc.  
Fine Cotton and Worsted Yarns. Machinery delivered duty and  
freight paid.



**'Cyclone'**  
**Fans**

are marvels of efficiency

They ought to be ; it took us fifteen years to  
produce a design that gave universal satisfac-  
tion. Our New Catalogue B is free for the  
asking, and is a veritable encyclopædia on  
drying and ventilating.

Our "Cyclone" Dryers (for all materials),  
Carbonizers, Yarn Scourers, Willows,  
and "Proctor" Garnetts have reputations  
that are worth something, too.

**Philadelphia Textile Machinery Co.**

Hancock and Somerset Sts.,

Philadelphia, Pa., U.S.A.

YOUR ENGINEER OUGHT TO HAVE A COPY !!

**The Manual of Lubrication,**

Or, How to Choose and How to Use Lubricants for  
any description of Machinery

With Methods of Determining the Purity and other Properties of Oils, etc  
By LOUIS SIMPSON

Price \$1.00 Address **BIGGAR, SAMUEL & CO.,**  
Post-paid Fraser Bldg., MONTREAL, Can.

**YARNS**

SPECIALY REPRESENTING . . . .

Wm. Hollins & Co. Ltd., Nottingham—Worsted and Merino Yarns.  
Wm. Aykroyd & Sons, Ltd., Bradford—Mercerized Cotton Yarns.  
Before making contracts, please write for samples and prices to—  
**W. M. CROWE,** Agent for the United States  
and Canada.  
477 Broome St., NEW YORK

**G. B. FRASER,**  
3 Wellington Street East, TORONTO

REPRESENTING

Miller Bros. & Co., Montreal; Paper and Celluloid Collars, Cuffs and Shirt Bosoms  
Meridian Cotton Mills, Meridian, Miss.; Colored Shirtings and Fancy Cottons.  
D. Fisher, Paisley, Ont., Etoiles and Tweeds.  
John J. Ashley & Co., Bradford, Eng., Dress Goods and Worsteds.  
Horner, Determann & Co., Barmen, Germany, Buttons, etc.  
S. W. Whitlam, Leeds, Eng., Woollens.  
Merrinack Print Mfg. Co., Lowell, Mass.  
Burton Bros. & Co., New York; Linings, &c.  
H. T. Lamkin & Co., Cotton Brokers, Vicksburg, Mississippi Long Staple Cotton  
a specialty.

WILLIAM FIRTH, President. EDWIN BARNES, Vice-President. JOHN H. NELSON, Treasurer.

**WILLIAM FIRTH COMPANY**

67 Equitable Bldg., - 150 Devonshire St., BOSTON, Mass.

SOLE IMPORTERS OF

ASA LEES & CO., Limited, Textile Machinery—Including Self-  
Acting Mules for Cotton, Woolen and Worsted. Nearly 1,000,  
000 Spindles of this well-known make at work or on order in  
Canada and the United States. All parts carried in stock.  
Also Bale Breakers, Revolving Flat Cards for Cotton, Drawing Frames,  
Slubbing Frames, Intermediate Frames, Roving Frames, Combers,  
Ribbon and Comber Lap Machines, Carding Engines for wool,  
wadding, and also condensers, &c.

SOLE AGENTS FOR

WILLIAM TATHAM & CO.—Waste Machinery. JOSEPH  
STUBBS—Gassing, winding and reeling machinery for cotton,  
worsted and silk. JAMES MACKIE & SONS, Limited,  
makers of flax, tow, hemp and jute preparing and spinning  
machinery. GEO. HATTERSLEY & SONS, Limited—  
Makers of every description of looms for plain and fancy weaves.  
GEORGE ORME & CO.'S patent bank indicators, etc.  
R. CENTNER FILS—Heddles.

SELLING AGENTS FOR

JOSEPH SYKES BROS.—Hardened and tempered steel card cloth-  
ing for cotton. DRONSFIELD BROS., Limited—Emery wheel  
grinders and emery fillet. Also yarn testers, wrap reels, &c.

—Although river water is soft, that is, comparatively free  
from mineral salts, it is always more or less contaminated by  
organic matter; to have a pure soft water, every dyeworks  
should have a large cistern to collect the rain water and  
melted snow, which in large cities only contains a scarcely  
determinable trace of sulphurous acid.

**E. T. CARTER**

Successor to JOHN HALLAM

**WOOL** 35 years at the old stand:  
83 & 85 Front Street East  
**TORONTO**  
DOMESTIC AND FOREIGN WOOLS

**LONG & BISBY**

DEALERS IN

Foreign and Domestic

**WOOL AND COTTON**GENERAL COMMISSION MERCHANTS  
HAMILTON, ONT.**JOHN E. BROWN,**

Foreign and Domestic

**WOOL**

77 McNab Street N.,

HAMILTON, ONT.

**B. Spedding & Co.**

72 St. Henry St., Montreal

Wholesale Dealers in all kinds of Foreign  
and Domestic Woolen & Cotton Rags,  
Paper Stock and Metals. Graded  
new Woolen Clips a specialty.

Agent for

George Hirst & Sons, Exporters of Woolen  
Rags, Bristol, England

Telephone 2382.

Cable—"SPEDDING," Montreal.

**The R. Forbes Co.**  
(Limited)

Manufacturers of

**WOOLEN AND WORSTED YARNS**

For Hosiery and other work

HESPELER, ONT.

**WOOL WM. GRAHAM**54 and 56 Wellington  
St. East, TORONTO  
Dealer inForeign and Domestic  
WoolsMy manufacturing experience assists me in import-  
ing wool for any desired goods.**THE MONTREAL BLANKET CO.**

Manufacturers of

Shoddies, Wool Extracts  
and Upholstering Flocks

Office and Works: COTE ST. PAUL

P.O. Address: MONTREAL

**WOOL****A. T. PATERSON & CO.**

MERCHANTS,

Lon. &amp; Lanc. Ins. Bldg.,

164 St. James St., MONTREAL

REPRESENTED BY MR. DAVID GUTHRIE.

**THE SMITH WOOLSTOCK CO.**Manufacturers and Dealers in all Lines of  
Wool Stock, Shoddies, &c., Graded Woolen  
Rags, Carbonizing and Neutralizing.Best prices paid for Wool Pickings, Woolen  
and Cotton Rags, Metals, &c. Hard Waste, &c.  
purchased or worked up and returned.

219 Front St. E., Toronto—Foot of Ontario St.

**HAMILTON & CO.****Wool Importers**

52 Wellington Street W., Toronto.

F. W. RICHARDSON, Manager.

**HAND BOOK**

OF THE

**CANADIAN CUSTOMS TARIFF AND  
EXCISE DUTIES**With list of warehousing ports in the Dominion—  
Extracts from the Canadian Customs Acts—Sterling  
Exchange, Franc, German Rixmark, and the prin-  
cipal Foreign Currencies at Canadian Customs  
values, and other useful tables, will be issued at  
close of present session of Parliament.Price—Fcap 8vo, Cloth  
Limp, 50c.

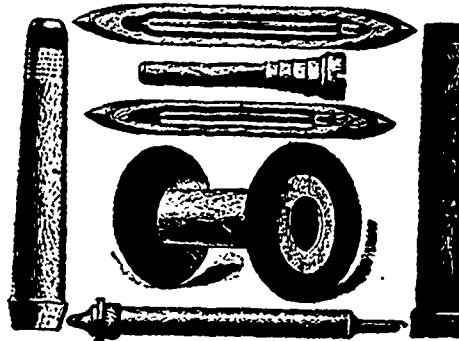
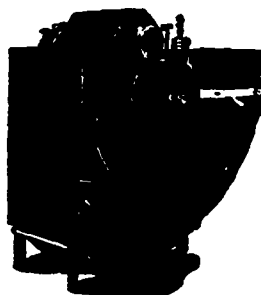
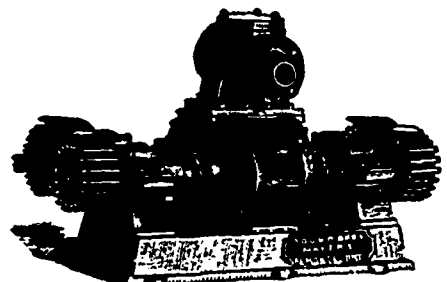
Discount to the Trade.

**MORTON, PHILLIPS & CO.**Stationers, Blank Book Makers  
and Printers

1755 &amp; 1757 Notre Dame St., Montreal

**WILSON BROS.****Wool Importers**

38 Front Street East, - Toronto.

B. A. WOOLS and CARBONIZED  
NOILS a specialty.**The Lachute Shuttle Company**We are the largest Shuttle  
Manufacturers in Canada.Slubbing, Roving and all kinds  
of Bobbins and Spools for  
Cotton and Woolen Mills.We have always on hand  
a large stock of  
Thoroughly Seasoned  
Lumber.Orders solicited and all work guar-  
anteed to give satisfaction.**E. F. AYERS, Manager**  
LACHUTE, P.Q.**MISSISSIPPI IRON WORKS**ESTABLISHED  
1875Manufacturers of English or American Pulling Mills and Washers, Wool Pickers, Ex-  
haust Fan Driers, Dusters, Rotary Force Pumps for Fire Duty, Boiler Feed Pumps  
Shafting, Hangers, Castings, Pulleys, Gearing, Forgings.  
Equipment of mills of every kind. **YOUNG BROS.,** Almonte, Ont.

# THE CENTURY MAGAZINE

will make of 1902 a year of  
**HUMOR**

**Contributors to the Year of Humor:**

"Mark Twain," F. P. Dunne ("Mr. Dooley"),  
Joel Chandler Harris ("Uncle Remus"),  
Edward W. Townsend ("Chimmie Fadden"),  
George Ade, Ruth McEnery Stuart, James  
Whitcomb Riley, Paul Laurence Dunbar,  
G. Slett Burgess, Frank R. Stockton, Tudor  
Jenks, Ellis Parker Butler, Carolyn Wells,  
Harry S. Edwards, Chester Bailey Fernald,  
Charles Battell Loomis, Oliver Herford,  
Elliott Flower, Albert Bigelow Paine, Beatrice  
Herford.

**Reminiscences and Portraits of:**

"Petroleum V. Nashy," "Josh Billings,"  
"Mark Twain," John G. Saxe, "Mrs.  
Partington," Miles O'Reilly, "Hans  
Breitmann," "Artemus" Ward, "Orpheus  
C. Kerr," "Bill Nye," Frank R. Stockton,  
Donald G. Mitchell, H. C. Hunner, "Sam  
Slick," Eugene Field, Richard Grant White,  
Capt. George H. Derby ("John Phoenix"),  
Oliver Wendell Holmes, Mortimer Thom-  
son ("Q. K. Philander Doesticks, P. S."),  
Bret Harte.

## The West

Illustrated by Remington  
Interesting Papers on  
**Social Life in New York**  
Personal Articles on  
**Presidents McKinley  
and Roosevelt**

A great year of the greatest of  
American magazines begins in No-  
vember, 1901, first issue of the new  
volume. Any reader of this adver-  
tisement will receive a copy of a  
beautiful booklet printed in six  
colors, giving full plans of THE  
CENTURY in 1902, by addressing  
at once

The Century Co., Union Square  
NEW YORK

# You are Interested in the Metric System

Of Weights and Measures,

because it will soon be adopted  
in Canada. See page advertise-  
ment in this issue.

## ROTHSCHILD BROS. & CO.

Importers and Manufacturers of  
all kinds of  
**BUTTONS AND FANCY GOODS.**  
Sole Agents for  
**JACQUOT & CO.'S FRENCH BLACKING**

Sole Agents for the  
American Continent



Sole Agents for the  
American Continent

Offices—466 & 468 Broadway, N.Y.  
78 Bay St., Toronto.  
And 56 Faubourg Poissonniere, Paris.

Established 1848.

## A. EICKHOFF

(A. KRAMER, Proprietor)

Manufacturer and Dealer in  
**Hatters', Furriers', Tailors',  
Glovers' and Shirt Cutters**  
**KNIVES AND SCISSORS.**  
Knives for all kinds of business uses on hand and  
warranted. All kinds of Cutlery ground  
and repaired.

No. 381 BROOME STREET,  
Between Broadway and Bowery,  
**NEW YORK CITY**

**John D. Lewis,**  
Importer and Manufacturer of  
**Dyestuffs, Dyewoods, Chemicals and  
DYEWOOD EXTRACTS**  
3 & 4 Exchange Place, PROVIDENCE, R.I.  
Mills: Charles and Bark Streets.

**STEVENS  
FAVORITE**

**GIVE THE BOYS A  
Stevens Favorite Rifle.**  
It will teach them to enjoy outdoor  
life, to learn how to shoot. The first  
will bring health and a good dispo-  
sition. The latter will induce coolness  
and deliberation, command of eye  
and hand—all valuable helps for  
success in future life. There is noth-  
ing cheap about a Stevens Rifle but  
the price; the quality is in every arm.  
**Favorite (with Open Sight) \$6.**  
These dealers do not carry these  
in stock we will send, express prepaid, on receipt of price.  
Our new catalogue contains description of the entire  
line of arms made by us; also a valuable reference  
book for shooters. No charge except stamp for postage.  
J. STEVENSON & TOOL CO., Box 2, Chicopee Falls, Mass.

**COP TUBES  
Cones and Shells.  
WORSTED TUBES,  
Conical Tubes,  
MAILING TUBES.**  
Haworth & Watson, LOWELL, MASS.

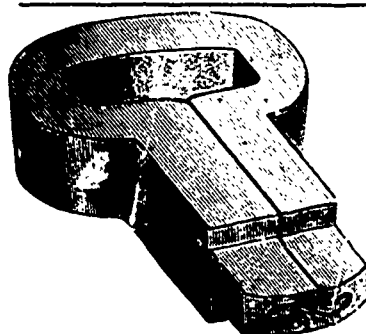
## WILLIAM CRABB & CO.

Manufacturers of all kinds of

**Hackle, Gill, Comb and Card Pins, Picker Teeth, Needle  
Pointed Card Clothing in Wood and Leather for  
Flax, Jute, Tow, etc.**

Hackles, Gills and Wool Combs made and repaired; also Rope Makers' Pins, Picker Pins, Special  
Springs, Loom and Shuttle Springs, English Cast-Steel Wire, Cotton Banding and General Mill Furnishings.

Bloomfield Avenue and Morris Canal, NEWARK, N. J.



**JOHN W. BARLOW**  
Manufacturer of  
**LOOM PICKERS,**  
LAWRENCE, MASS.

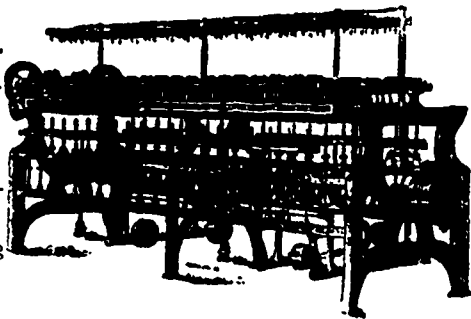
This cut represents Barlow's Pat. Bow Picker  
with solid interlocking foot. Pat. Feb. 26, 1889.



# H. W. KARCH,

HESPELER, ONT.

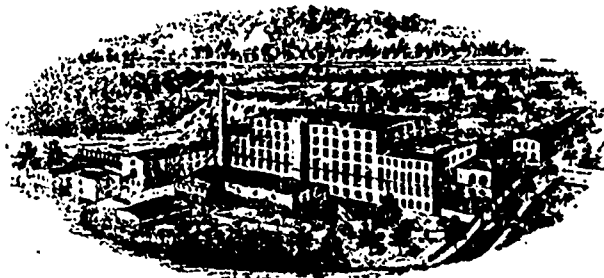
Manufacturer of  
Woolen Machinery,  
Rotary Fulling  
Mills, Kicker Full-  
ing Mills, Soaping  
Machines, Cloth  
Washers,  
Wool & Waste  
Dusters, Rag Dus-  
ters, Drum Spool  
Winders, Reels,  
Spooling & Doubling  
Machines, Ring  
Twisters, Card  
Creels,



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

# 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.

## Dominion Oil Cloth Co'y

MANUFACTURERS OF Limited

# Oil-Cloths

of every description

Floor Oil-Cloth, Table Oil-Cloth, Carriage Oil-Cloth, Enamelled Oil-Cloth, Stair Oil Cloth, etc.

Office and Works:  
Corner St. Catherine and Parthenals Sts., MONTREAL, QUE.

## CARBONIZER

Much Superior to Acid for use in  
**Wool, Piece-Goods & Rags.**  
Address MERRIMAC CHEMICAL CO.,  
77 Broad St., Boston,  
Mfrs. of Acids and Chemicals.

REGISTRATION OF DESIGNS,

# PATENTS IN ALL COUNTRIES

GUARANTEED  
**BEAUDRY & BROWN**

CIVIL ENGINEERS AND LAND SURVEYERS  
107 ST. JAMES ST., MONTREAL

WRITE FOR BOOKLET.



ELLIOT

Send for Circular.

## Cloth Folder and Measurer

For Cotton and Gingham Mills, Bleacheries, Print Works, etc.

Manufactured by **Elliot & Hall, Worcester, Mass.**

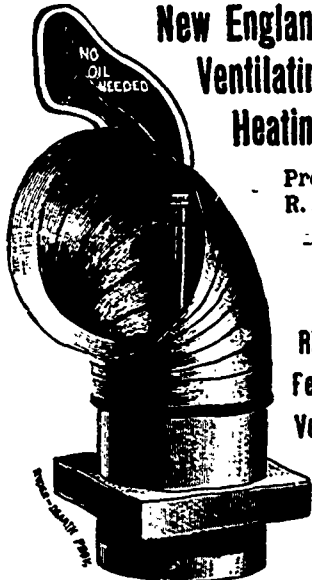
## New England Ventilating and Heating Co'y.

Providence, R. I.

Manufact's of

**Richardson's Evolving Ventilator**

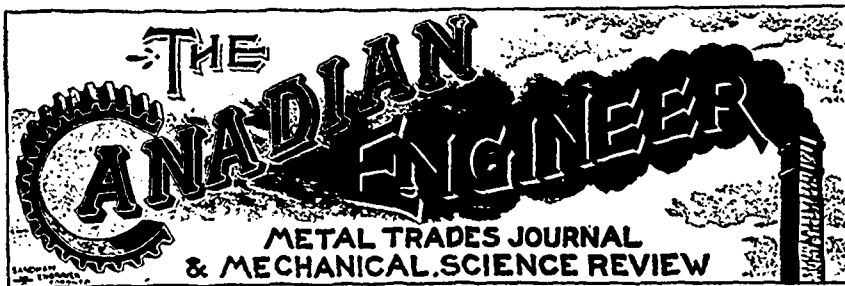
For use where power is not available.



This Ventilator is balanced, has ball bearings and revolves with the least perceptible current of air, having no obstruction to its outlet, and never fails to give satisfaction. Specially adapted for Mills, Dye Houses, Workshops. They are so completed that any carpenter can erect them.

OFFICE AND WORKS:

926, 928 & 930 Manton Avenue



METAL TRADES JOURNAL & MECHANICAL SCIENCE REVIEW

ISSUED MONTHLY IN THE INTERESTS OF THE

CIVIL, MECHANICAL, ELECTRICAL, LOCOMOTIVE, STATIONARY, MARINE, MINING, AND SANITARY ENGINEER; THE MACHINIST AND FOUNDER, THE MANUFACTURER AND CONTRACTOR. SUBSCRIPTION, \$1 - - A YEAR - -

THE CANADIAN ENGINEER stands to-day unrivalled among Canadian trade papers for the wide distribution and character of its circulation. It has in fact the largest circulation of any trade journal in Canada.

Sample copies sent free to intending subscribers. Advertising rates on application

## BIGGAR, SAMUEL & CO., Publishers

FRASER BUILDING, MONTREAL,

62 Church Stret, - - - - - TORONTO

JOHN SHAMBOW, Treasurer.

# Woonsocket Reed and Shuttle Works

**WOONSOCKET, RHODE ISLAND**

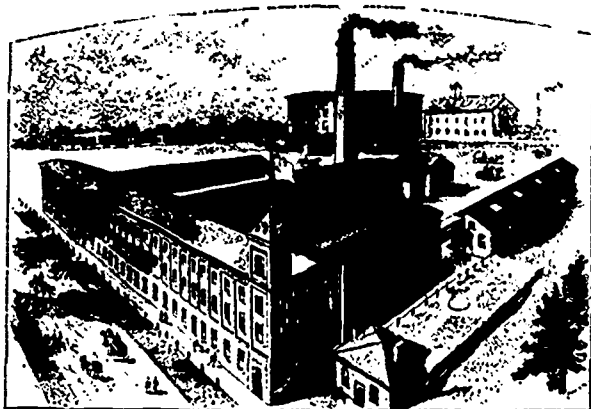
Makers of Every Description of

## Power Loom Shuttles

### Hamilton Cotton Co., Hamilton

MANUFACTURERS OF

White and Colored Yarns, Single or Double, Hosiery Yarns of all descriptions, Warps, Twines, white or colored Webbing & Bindings in great variety, Lampwicks. etc.



SELLING AGENTS

WM. B. STEWART, 18 Front St. East, Toronto.

Agent for Warps: GEO. REID, 11 & 13 Front St. E. TORONTO.

ESTABLISHED 1859

### THE C. TURNBULL CO., OF GALT, Limited.

MANUFACTURERS OF

Full Fashioned Lamb's Wool Underclothing, Hosiery and Knitting Yarns, Perfect Fitting Ladies' Ribbed Vests, Sweaters, Jerseys, Knickers.

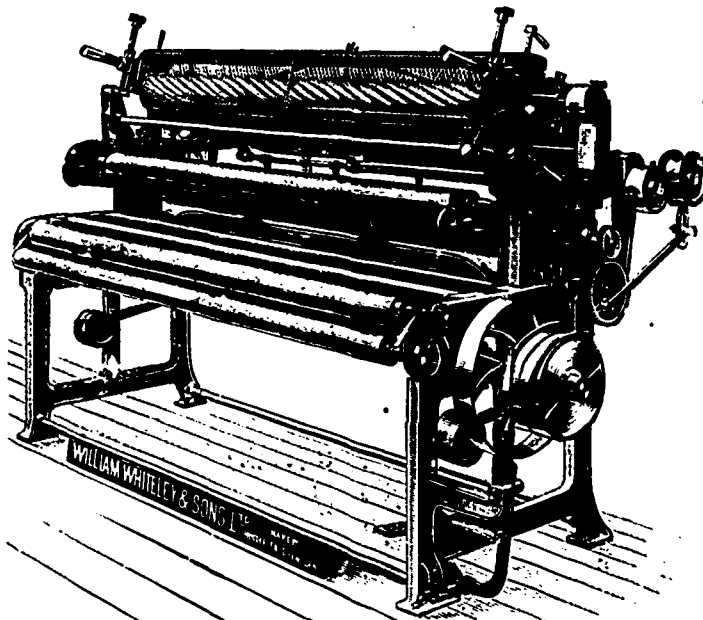
—Print cloths in the United States are scarce for near delivery. Woolen mills are working overtime, and have much business in sight. More linens have been opened at slightly lower figures than a year ago.

—The Labor Gazette, in a review of the condition of the labor market for 1901, indicates that, industrially speaking, the year was an exceptionally good one for the wage-earners of Canada.

—The Philippine Islands possess a rich source of wealth in their dyewoods, dye barks and herbs, which only needs development. The dyewood industry has long been carried on unsystematically by the natives in a most primitive and wasteful way, immense quantities of the valuable material being uselessly lost, but since a kind of military forestry department has been established by the United States, the hewing and preparing of the woods is carried on in a more regular manner.

### William Whiteley & Sons, Ltd.

LOCKWOOD, HUDDERSFIELD, ENGLAND



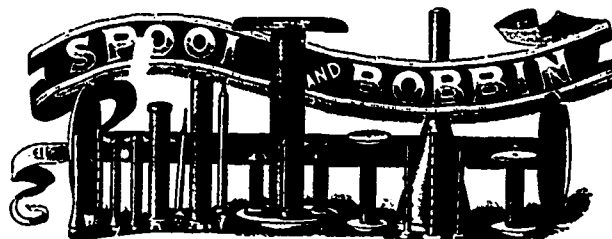
Complete Cloth Finishing Plants  
Tentering and Drying Machines  
Wool and Cotton Drying Machines  
Improved Self Acting Mules  
Winding, Warping and Sizing Machines  
and other Woolen Machinery  
Mercerizing Machinery. Complete Plant for Aniline Black  
CATALOGUE ON APPLICATION.

THOMAS KER

J. HARCOURT

### KER & HARCOURT,

ESTABLISHED 1857



MANUFACTURERS,

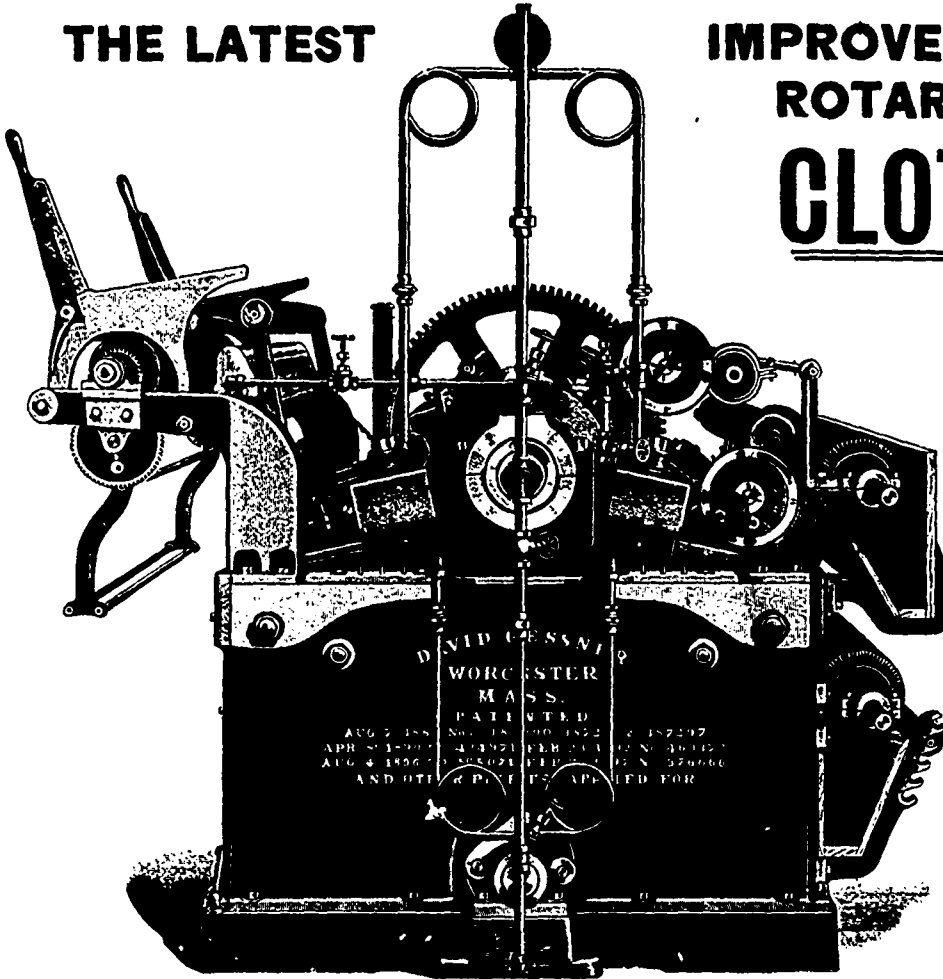
Orders by Mail  
will receive prompt  
attention

Parry Sound, Ont.

**THE LATEST**

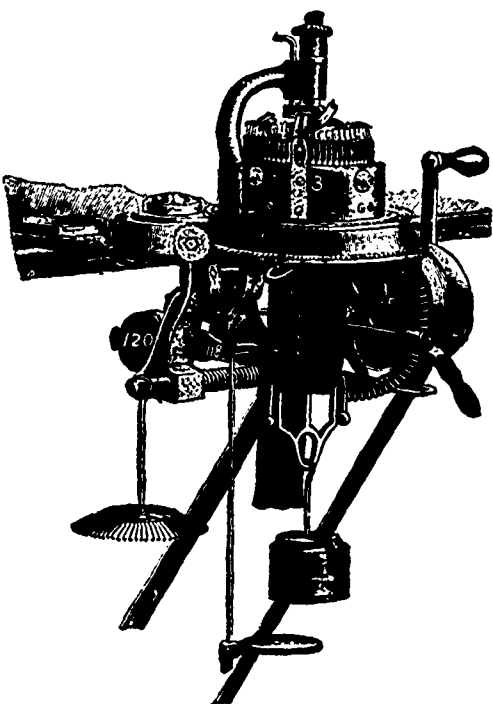
**IMPROVED DOUBLE-BED  
ROTARY**

**CLOTH PRESS**



The bed plates are self-adjusting, the levers that operate them being mounted upon sliding steel fulcrum bars within the frames. The trussing apparatus of the bed plates is so arranged as to permit not only a forcing of the centres of the bed plates in a forward direction, toward the cylinder, but also away from it, which is of the utmost importance if the bed plates should ever become sprung. Bed plates and cylinder after being cold finished, are ground absolutely true while heated by steam at 75 lbs pressure, insuring perfectly straight and uniform pressing surfaces. Pressure is applied and removed instantaneously, and by power.

**DAVID GESSNER,**  
WORCESTER,  
MASS., U.S.A.



**Seamless Hosiery  
Knitting  
Machines**

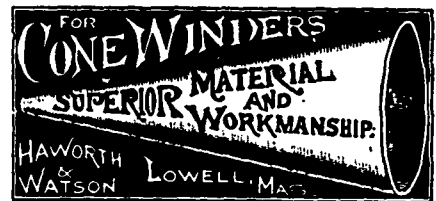
We have been hard at it for nearly one-third of a century.

We have had Success.  
Our customers have had Success.

**Why ?**

Merit and Superiority in our Machines tells the story. Catalogue free.

**CREELMAN BROS.**  
Manufacturers  
GEORGETOWN, ONTARIO, CAN.



You are interested in the

**METRIC  
SYSTEM**

Look for the Advt. of the Metric Chart in another part of this issue.

**CHINA CLAY**—Finest and Low Qualities  
**CEMENT**— " " "  
"BIRD & STAR" & "LION" BRANDS

**FREEMANS** (Shippers)  
20 Bucklersbury, LONDON

Established 1833.

41 Highest Awards.

# Wilson Brothers Bobbin Co., Limited

Telegrams "Wilsons, Cernholme"  
A.B.C. and A1 Codes used.

## BOBBINS & SHUTTLES

(POSTAL ADDRESS:

Cernholme Mills, ALSO Atlas Works,  
Todmorden. Liverpool.

Office:

14 Market Place, - - - Manchester.

The best results in  
**Card Grinding**  
are obtained by using 

**DRONSFIELDS' PATENT  
GROOVED EMERY FILLETING**  
SPECIALITIES: MACHINES FOR GRINDING CARDS  
MACHINES FOR COVERING ROLLERS WITH LEATHER

**DRONSFIELD BROS. LTD.**  
Atlas Works, OLDHAM, ENGLAND.

COUNTY G\*

# NORTHROP IRON WORKS

IRON & BRASS FOUNDERS.

HEATING & VENTILATING ENGINEERS.

Office and Showrooms:

296 St. James Street,  
MONTREAL

Phone, Main 4180



Works and Head Office:

VALLEYFIELD, P.Q.  
CANADA

Phone No. 2

Manufacturers of . . . .

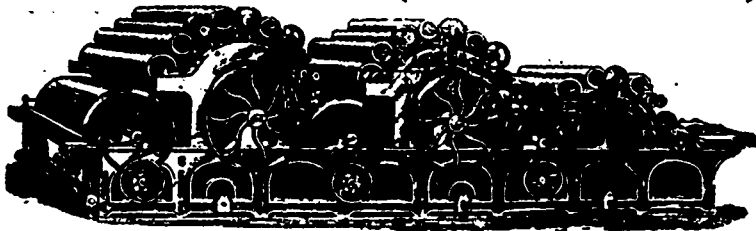
REGISTERED

WRITE FOR QUOTATIONS.

"Handy" Elevators. Steam, Hot Water and Gas Radiators. "Handy" Dumb Waiters. Sectional Heating Boilers. Plain and Automatic Looms. Spoolers. Warpors. Fire Door Fixtures. Sanitary Outfits for Mills and Factories. Ventilating and Exhaust Fans. Tool Grinding Machinery. Nickel and Bronze Plating. Patent Hangers and Couplings. Model and Patent Machinery.

TEXTILE MACHINERY (New and Second Hand)

CARD CLOTHING TETLOW'S  
Stock in Canada



Condenser Aprons Buffed Surfaces  
Plain & Grooved

Oak-Tanned and White Belting  
Cotton Banding, Rim Spindle and Braided  
Shuttles, Pickers, Heddles, Harness  
Patent Frames, GENERAL FURNISHINGS

ROBT. S. FRASER

English Sales Attended.

17 LEMOINE ST., MONTREAL

# C. E. RILEY & CO'Y.

281-285 Congress Street, Boston, Mass.

Builders and Importers of

COTTON, WOOLEN, WORSTED

# MACHINERY

CARD CLOTHING, EMERY FILLET, EGYPTIAN COTTON,

SPINDLES, FLYERS, FLUTED AND SHELL ROLLS, GRINDING ROLLS, &c.

BUY OUR  
**CARD CLOTHING**  
 BECAUSE IT IS  
**ENGLISH**  
 LEATHER & CLOTH BACKINGS  
 HARD & TEMPERED WIRE  
 MACHINERY  
**ALL WORKMANSHIP**  
 MADE HERE AT HOME  
 ASK FOR SAMPLES & QUOTATIONS  
 THE **J. C. McLAREN BELTING COY.**  
 TORONTO FACTORY MONTREAL.

**SAMUEL LAWSON & SONS, LEEDS, England**

—MAKERS OF—

**Machinery for Preparing and Spinning  
 Flax, Tow, Hemp and Jute**

**Special Machinery for the Manufacture of Binder and Ordinary Twines**

**Good's Patent Combined Hackling  
 and Spreading Machine**

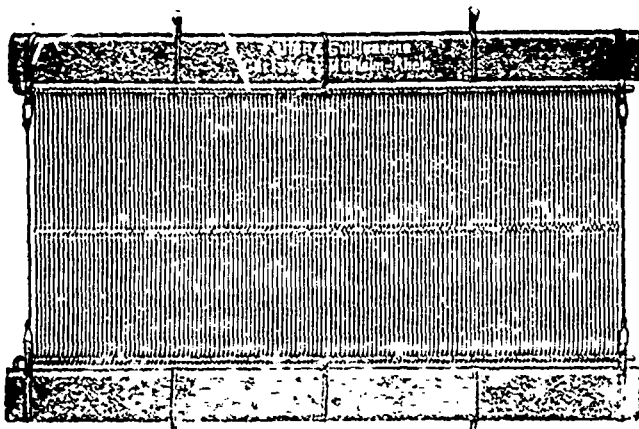
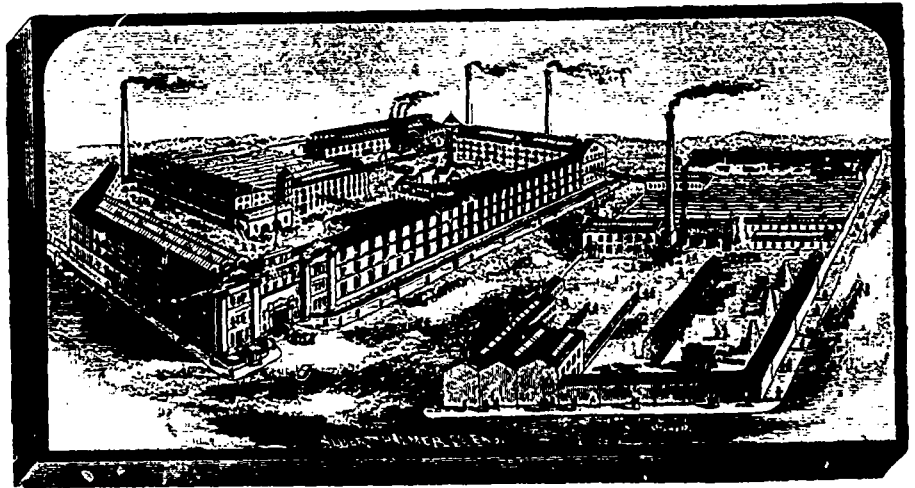
**Patent Automatic Spinning Frames  
 Improved Laying Machines**

and other special machinery for the  
 manufacture of Rope Yarns.

ALSO OF

**Brownell's Patent Twisting and Laying  
 Machines for Twines**

Council Medal, London, 1851; Grand Medal,  
 Paris, 1867; Prize Medal, Moscow, 1872; Diploma  
 of Honor, Vienna, 1873; Highest Award, Phila-  
 delphia, 1876; Gold Medal, Paris, 1873; Highest  
 Award (Medal), Melbourne, 1880.



*Fellen & Guillaume, Carlswerk  
 Aelien-Gesellschaft, Mülheim-on-Rhine*

Manufacturers of

**Tinned Cast Steel Wire Heddles**

made on Patent Automatic Machines and consequently perfectly uniform in every  
 respect. The Lightest, Exactest and most Uniform Wire Heddles ever made, not  
 surpassed by any other Wire Heddles in the market.

Patent "Favorite" Shafts for Weaving

give, combined with above Heddles, the best, most Reliable and most Durable Har-  
 ness, either made with one or two carrying wires inside the wooden frame. These  
 shafts have already been adopted by a great number of weavers, who speak most  
 favorably of them, as can be seen from many testimonials in the possession of the  
 makers. For Prices apply to

L. S. WATSON MANUFACTURING CO., Leicester, Mass.

**L. S. WATSON MANUFACTURING CO.  
 LEICESTER, MASS.**

Sole Agents for the BEST  
 Spinning & Twisting Travelers  
 Made by Prouty Wire Co.



Send samples of the Travelers you use and  
 we will send you a sample box to match  
 of our make free of charge.

**Manufacturers of WATSON'S PATENT MACHINE WIRE HEDDLES**

Guaranteed to be perfectly adapted to weaving all kinds of Woolen, Cotton and Worsted Fabrics, Rancy Cotton, etc., etc.  
 Superior Harness Frames furnished promptly. Also Hand Cards of every description.

Also Agents for the SMETHURST Roving and Twisting Gear for all woolen manufacturers and makers of yarns. Write us for particulars.