

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires: Pagination is as follows: 1-2, 113-136, 3-12.

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XXI. TORONTO AND MONTREAL, JUNE, 1904. No. 6.

WILSON, PATERSON & Co.
 Board of Trade Bldg., Montreal,
 REPRESENTING IN CANADA
 The United Alkali Company of England.



OFFER TO THE TRADE—
 Caustic Soda, 50° to 78°, Caustic Potash, Salt Cake, Salsoda,
 Soda Ash. (Ammonia and Leblanc processes).—Chlorate of Soda,
 Chlorate of Potash, Hyposulphite of Soda (Curlew Brand),
 Chloride of Calcium, Bichromate of Soda, Bichromate of Potash,
 etc., etc.

McARTHUR, CORNEILLE & CO.
 Importers and Manufacturers of

OILS
CHEMICALS
 and **DYE**
STUFFS

310 to 316 St. Paul St.
MONTREAL

ANILINES
ALIZARINES
DOMINION DYEWOOD & CHEMICAL CO.
 TORONTO
 Direct Importers. Sole Agents in Canada for
 Messrs. The **FARBENFABRIKEN** Vormals **FRIEDR. BAYER**
 & CO., Elberfeld, Germany.

WATSON JACK & COMPANY,
MONTREAL.
ANILINES and DYESTUFFS.
Chrome Acid Colors.
Excellent on Yarn or Pieces.
 Send for dyed Samples illustrating their
 great utility.

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.

CASELLA COLOR COMPANY.
 (American Branch of
 Leopold Casella & Co.)
Dye Stuffs.
 NEW-YORK, 182-184 Front Street.
 BOSTON, 68 Essex Street.
 PHILADELPHIA, 126-128 South Front Street.
 PROVIDENCE, 64 Exchange Place.
 ATLANTA, 47 North Pryor Street.
 MONTREAL, 86-88 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

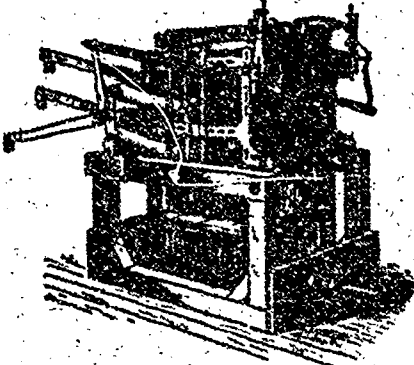
Logwood Extracts
 IN PASTE AND POWDER
 Purest and Cheapest in the Market.
 Manufactured right on the ground.
The West Indies Chemical Works, Limited,
 Spanish Town, - Jamaica.
Bellhouse, Dillon & Co.
 Sole Agents
MONTREAL. TORONTO. NEW YORK. PHILADELPHIA.

USE THE
"Halton"
Jacquard

BEST MACHINE ON THE MARKET

Single Lift
Double Lifts
Rise and Falls
Double Cylinders
Cross Borders
Brussels

The only
Reliable
Fine
Index
Machine.



"1304" Fine Index
Double Lift.

Thomas Halton's Sons

Alleghany Avenue and C. Street, - PHILADELPHIA

New York Boston Philadelphia Providence Chicago Montreal

C. BISCHOFF & CO.

IMPORTERS OF

Aniline Colors and Alizarines

Dye-Stuffs and Chemicals

Main Office, 53 Park Place, - New York.
Canadian Branch, 416 St. Paul St., Montreal.

YARNS

W. M. CROWE,
23-25 Wellington St. W.,
TORONTO

Sole
Agent
For
Canada

Specially representing:-

Messrs. John Smith & Sons, Ltd., Bradford, Eng., Worsted Yarns,
Messrs. Wm. Hollis & Co., Ltd., Nottingham, Eng., Worsted and
Merino Yarns.

Mr. J. C. Henshall, Cross Hills, Eng., Knitting Yarns.

Mr. J. H. Wilby, Bradford, Eng., Fancy Loops and other effect

Yarns in Worsted and Merino.

Messrs. Aytroyd & Grandage, Ltd., of the Bradford Dyers' Associa-
tion, Mercerized Cotton Yarns.

Knitting Manufacturers will find great satis-
faction in using

MORSEFALL'S RENOWNED HAYFIELD KNITTING YARNS
FOR SWEATERS AND HOSEY.

Mechanical Draft Apparatus,
Heaters and Fans,
Blowers and Exhausters.

GARLAND MFG. CO.

SACO, MAINE.

(Formerly Loom Picker Co., Biddeford, Maine).

H. P. GARLAND, TREASURER.

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.

PEROXIDE OF SODIUM BLEACHES

"White
Without
Weakening"

THE ROESSLER & CHASSLACHER
CHEMICAL CO. 100 WILLIAM ST. NEW YORK.

ROBERT S. FRASER

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

Tetlow's Card Clothing.
(STOCK IN MONTREAL).

Manufacturers of Wastes and Sheddles.

17 Lemoine Street, - - - MONTREAL

Drying Apparatus for all Textile Materials.
Heating and Ventilating for Mills and Factories.

For Catalogues and Prices write-

SHELDON & SHELDON,
CALT, Ontario, Canada.
Formerly McEachren Heating & Ventilating Co.

CANADIAN JOURNAL OF Fabrics

THE JOURNAL OF THE
Textile Trades of Canada.

Vol. XXI.

TORONTO AND MONTREAL, JUNE, 1904.

No. 6.

Canadian Journal of Fabrics

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

Subscription: Canada, United States and Great Britain, \$1.00 per year Foreign, 5/-. Advertising rates on application.
Offices 18 Court St., cor. Church, Toronto, and the Fraser Building, Montreal

BIGGAR-SAMUEL, LIMITED, Publishers

TRAVELLING REPRESENTATIVE: A. W. SMITH.

Toronto Telephone, Main 4310 | 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 1st 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, LIMITED, Publishers.

CONTENTS OF THIS NUMBER

Among the Mills.....	130	Literary Notes.....	134
Asbestos, Manufacture of.....	135	Newfoundland, Canadian Relations	
Bird Woolen Mills.....	131	with.....	113
Breeze, A. from Bathley.....	132	Personal.....	134
Brockville Hat Works Failure.....	122	Seivages.....	117
British Wool and Textile Markets.....	136	Tariff Changes, The Woolen.....	114
Business Notes.....	133	Temperature and Humidity in Textile	
British Trade with Canada.....	130	Factories.....	116
Canada Woolen Mills, Affairs of.....	121	Textile Tariff Changes.....	123
Coloring Process, Old Time Textile		Toronto Fire, The.....	125
Dyer is a Chemist.....	118	Weaving, Hints on.....	119
Fabric Items.....	133	Wilton, Decay of.....	120
Flax Industry in Canada.....	126	Wool Market.....	130
Foreign Textile Centres.....	132	Woolen Mills Failure, A Lesson	
Linen, decline of and the rise of		of the.....	115
Cotton.....	128		

CANADIAN RELATIONS WITH NEWFOUNDLAND.

The fact that Newfoundland sits astride of the Atlantic outlet of our great system of water highways, and the further fact that she owns a large strip of "the continent to which we belong" are two geographical and commercial reasons why Canada should always have a living interest in that important island. But because "Britain's oldest colony" is a part of our own Empire, and is inhabited by a sturdy people who have struggled bravely with an adverse fate in the past, we feel more than a merely commercial interest in and sympathy for Newfoundland. It, therefore, seems a criminal blunder that when a deputation from the island came to Ottawa some years ago to discuss confederation with Canada the Dominion Government of the day wrecked the movement by splitting hairs over the terms. It is certain that no

Canadian Government of this or a future day would view a similar proposal with such a narrow mind. Whether the opportunity will ever occur again is a question which many on both sides of the Gulf of St. Lawrence are asking themselves now that the French shore dispute is happily settled. It certainly will never occur again under conditions as favorable, in a financial sense, to Canada; for the trade depression that had some influence in the visit of the Newfoundland deputation is not likely to recur again with the same severity, since a Canadian firm went down and started to build the first railway across the island. This railway has opened up the forest and mineral resources of the interior and the Newfoundlanders no longer put all their eggs into one basket—the fisheries. The trade of the island is not only expanding, but is becoming more varied.

It is specially interesting to Canadians to take note of some of the economical tendencies in Newfoundland in recent years. The island has not heretofore been a manufacturing country. Of her total imports of \$8,479,944, in 1903, all but \$545,669 came from Canada, Great Britain and the United States, while of her total exports of \$9,976,504, in the same year, \$4,632,780 go to the Anglo-Saxon countries named, and \$5,343,724 to other countries, these exports consisting still chiefly of fish. The proportions in which the trade of Newfoundland is divided between Canada, Great Britain and the United States, are shown by the following totals for 1886, 1897, and 1903:

Imports from—

	1886	1897	1903
Canada	\$1,937,605	\$1,593,931	\$2,809,897
Great Britain..	1,911,001	1,960,999	2,145,461
United States	1,672,810	2,135,068	2,920,914

Exports to—

Canada	195,245	403,902*	1,102,650
Great Britain .	1,212,715	1,339,472*	2,173,090
United States	288,453	528,668*	1,357,031

*The figures in this case comprise only such exports as are the produce or manufacture of the colony

The textile trades are almost monopolized by Great Britain, Canada and the States, but in these, as in many other lines, the United States has of recent years made notable advances at the expense of both the Mother Country and Canada. This is attributed by a Globe correspondent now visiting the island, to

the energetic work of the United States Consul at St. John's, who reports to Washington every new opening for trade in the island. The question is, why should Canada have commercial agents in countries ten thousand miles away, and neglect to have a representative in a splendid market at her front door here, among a people with whom we should be in closest and most constant touch politically and commercially?

The trade returns of the colony in former years have had a very simple classification, which within the past two or three years is being made more elaborate, but the following items will be suggestive to dry goods merchants and manufacturers of textile fabrics in Canada:

Canvas.

	1888	1897	1903
Canada		8,799	7,545
Great Britain.....	15,508	10,158	7,420
United States.....	40,170	15,404	23,441

Cordage.

	1888	1897	1903
Canada	1,982	8,765	5,819
Great Britain.....	36,289	12,784	37,818
United States.....	10,247	3,924	5,254

Dry Goods.

	1888	1897	1903
Canada	14,761	41,007	64,438
Great Britain.....	660,075	791,616	595,836
United States.....	27,548	33,633	87,456

Hair Cloth.

	1888	1897	1903
Canada			4,298
Great Britain.....			601
United States.....			363

Hats and Caps.

	1888	1897	1903
Canada			3,447
Great Britain.....			47,148
United States.....			3,203

Nets and Netting.

	1888	1897	1903
Canada			10,249
Great Britain.....			4,589
United States.....			13,722

Oakum.

	1888	1897	1903
Canada		175	609
Great Britain.....	3,374	1,686	444
United States.....			15

Oiled Clothing.

	1888	1897	1903
Canada		9,329	14,467
Great Britain.....		635	1,538
United States.....		11,182	13,729

Ready-Made Clothing.

	1888	1897	1903
Canada	3,140	3,143	12,044
Great Britain.....	114,726	140,759	140,850
United States.....	16,403	5,160	24,452

Twine.

	1888	1897	1903
Canada			658
Great Britain.....			1,342
United States.....			211

Window Shades.

	1888	1897	1903
Canada			368
Great Britain.....			669
United States.....			854

Yarns.

	1888	1897	1903
Canada	37	26	105
Great Britain.....	14,477	15,813	19,199
United States.....			47

Hemp, Yarn, etc. (Free).

	1888	1897	1903
Canada			52,282
Great Britain.....			110,936
United States.....			

Lines and Twines (Free).

	1888	1897	1903
Canada			4,683
Great Britain.....			16,383
United States.....			34,292

Wool (Free).

	1888	1897	1903
Canada		310	1,342
Great Britain.....		99	120
United States.....			296

羊毛

THE WOOLEN TARIFF CHANGES.

The budget announcements, that have been so anxiously looked for by the Canadian woolen manufacturers, were made at Ottawa on the 7th inst., and, as will be seen by extracts from the Finance Minister's speech, the minimum duty to be imposed upon fabrics "composed wholly or in part of wool, worsted, the hair of the alpaca goat (excepting wool blankets, flannels, bed comforters and counterpanes), is now 30 per cent., instead of the 23 1-3 per cent. heretofore ruling. The woolen manufacturers had hoped for a specific duty on the pound weight of goods imported, as this would have kept out more effectually the cheap, shoddy goods which too often are palmed off on the consumer as Canadian made, while the finer makes of Canadian tweeds, etc., are often sold over the counter as foreign. Though the manufacturers believe that a specific duty on low class goods would have been more effectual, while not having the effect of raising the price to the consumer; they recognize that the new duties, if they do not restore to the home manufacturer the advantages he had under the former tariff, will at least give him a chance for his life. It will, of course, take time for the water-logged ship to right herself, if the history of the Wilson tariff of the United States is to be repeated in Canada, but if the development of the West continues, that period of recuperation may not be so long and tedious.

We must give Mr. Fielding credit for recognizing the fact that the woolen manufacturers constituted a grievous exception to the generally beneficent application of the preferential principle in Anglo-Canadian trade. Even his own high ideals of devotion to the interests of Empire did not demand that the promotion of Imperial trade should be pushed to the point of ruining a native industry, which had been built up by years of painful labor to a position of prime importance in the country, especially as this ruination would not directly benefit the whole of the Motherland, but merely a set of its own manufacturers, who are of no more importance to its economy than the Canadian woolen manufacturers are to Canada.

We would suggest to the Finance Minister that as he has very wisely placed linen manufacturing machinery on the free list, he do the same by the woolen trade. There are no woolen power looms, nor wool or worsted spinning machinery made in Canada, and therefore if this class of machinery were placed on the free list, no harm would be done to any existing home industry, while the free entry of such machinery would greatly reduce the cost of equipping a new mill or renewing the plant of an old one. As the Dominion treasury has a large surplus, the revenue from such a source is not needed, and as Mr. Fielding has pointedly referred to the need of re-equipment by many mills, he will see here such a chance to promote the interests of textile manufacturers—including the cotton, silk, flax, binder twine and all other branches of such trades—as will be keenly appreciated at this crisis.

The dump-prevention features of Mr. Fielding's tariff announcements, though not likely to affect the textile trade materially at present, are apparently destined to become of great consequence in our tariff system, if the plan can be made to work in practice. It is in line with twentieth-century diplomacy in the field of politics. It should provide automatic machinery for remedying evils as they arise, instead of having to wait upon legislative action, which is too often a case of locking the stable door after the horse is stolen. If the plan is found to work well in Canada, it is not unlikely to be copied by other countries, and if so, it will have the effect of steadying international trade, and cutting off the tentacles of the combines and trusts, who are the fathers of the dumping system.

A LESSON OF THE WOOLEN MILLS' FAILURE.

While the failure of the Canada Woolen Mills, Limited, was a natural outcome of a condition of trade brought about by tariff reduction, yet there were individual elements in the case which tended to weaken the position of the mills, and hasten a collapse which might possibly have been staved off till the era of tariff readjustment had arrived. The

history of these mills conveys a moral to other textile manufacturers which ought not to be forgotten, and the hope that the many manufacturers who market their goods through selling agents may avoid the wake of this wreck, induces us to publish the retrospect given by the late manager, Mr. Morley, at the request of some of the shareholders. Mr. Morley was for a quarter of a century manager of the Waterloo mill, and was considered one of the safest men in the business in Ontario. His statement shows the danger of having the policy of a mill controlled by the selling agents. The mill manager knows, or should know, the cost of producing goods and when he is convinced that goods cannot be made except at a loss, it is time to seek new markets or else to shut down. Other mill managers besides Mr. Morley have a similar story to tell. Mr. Beal, the manager of the Brodie mill, at Hespeler, resigned because he refused to fill an order taken by the agents for 10,000 yards of goods at 17½c., when the actual cost of manufacturing was more.

We should not say that the blame for this rests primarily with the selling agent, who in this, as in most other cases, is paid by commission on his sales. The agent is interested in selling goods and getting his commission on the same. The responsibility really rests upon the directors who permit an agent to determine the question of prices, which they, as representing the shareholders, should determine for themselves. The mill manager knows the point at which profit disappears and loss begins, and when an agent cannot keep the mill on the right side, it is time for the mill interests to look for a remedy. That remedy may consist in "calling" the bluff of sharp buyers, or the difficulty may be traced to some other source. But whatever the trouble, its diagnosis and remedy should be made and applied by the mill, whose existence is affected, and not by a selling agent paid by commission. To what extent a remedy may be found by employing a selling agent on salary instead of commission, must depend on circumstances. The mill interests will certainly not be helped by getting the agent to take stock in the mill unless his holdings are so large that an extra dividend would mean more to him than the commission on the goods sold.

A selling agent is like electricity—a serviceable element when kept well insulated, but risky when you allow his current to leak into the mill. Moral, consult the selling agent as much as you may on matters relating to the market, but keep your mill in your own control.

—Nature has not been long in providing an antidote for the cotton boll weevil which has been doing such damage among the cotton crop in Texas, and causing such anxiety to growers. A small red ant has appeared, and is waging war against the weevil. An effort is being made to collect a supply of these

ants in Guatemala and to place them where they will do the most good. Thus nature has her compensations.



—One cannot understand why it should cost 75 cents to send a post office order for an amount up to \$5 to Great Britain, whereas the same amount can be sent to the United States for 3 cents. It is on a par with the other branch of British postal administration, under which a publisher in Great Britain is charged 4d. (8 cents) per lb. for newspapers sent to Canada, whereas United States publications come into Canada at 1 cent per lb. It is no wonder that the circulation of United States publications in Canada has enormously increased in recent years, while British publications have stood still or gone behind. It is no wonder, also, that trade in small articles has, with such inducements, increased through the past between Canada and the States so fast in recent years. It seems a pity that British manufacturers, merchants, and people should be so long in waking up to the fact that the post office is an institution which should be conducted not for the direct profit of the service, but to achieve the most extensive and cheapest means of communication for the benefit of the nation. The Postmaster-General of Canada has time and again urged the Imperial Post Office Department to meet the advances of Canada in making cheap interchange of letters and papers possible throughout the Empire, and it is to be hoped he will live to see a complete response, for any loss of direct profit in the postal service will undoubtedly be made up to the people by increased trade with Canada and the other colonies through cheap transportation facilities in the post. We are glad to see signs of the awakening in the Old Land, as Lord Stanley told the House of Commons last month that he had proposed to all the colonies a system by which British postal orders might be issued and paid in the colonies as well as in the United Kingdom, and that the orders should be interchangeable between the colonies and Great Britain. Judging by the responses of most of the colonies to the advances of Canada in the matter of cheap newspaper postage, there is little doubt that most of the self-governing colonies will respond.



TEMPERATURE AND HUMIDITY IN TEXTILE FACTORIES.

There was a time, not many years ago, when it was thought absolutely necessary for the economical spinning of yarn, more particularly cotton, especially for fine numbers, to locate the factory at some place where a proper degree of moisture existed naturally in the atmosphere. It was much for this reason that manufacturing for fine cotton yarns found its most profitable existence in England about Bolton, and the idea still exists that this is the only locality in Great Britain where the finest spinning can be accomplished. A not unlike view was taken of the coast district about New Bedford or the southeastern section of the New

England States. If nature was the only dependence for climatic conditions in order to spin yarns to their highest perfection, manufacturing of this kind would be confined to limited districts. Of late years, however, mechanical devices have been invented for the humidification of the atmosphere, so as to bring it to a state approximate to that which is sought for in nature.

Mechanical methods, however valuable they may be in accomplishing their purposes, are efficient only comparatively. The efficiency of these methods lies in keeping the humidity of the air uniform throughout the whole twenty-four hours, not only for its effect on the fiber and yarns, but upon everything that relates to the transmission of power, as bands, belts, ropes, etc., which are lengthened or contracted by the hygrometric changes that may take place. A great deal that has been accomplished has not been according to the best scientific methods or principles, but along lines that are empirical without exact knowledge. It is well known from practical experience, that cotton spun in a cold and dry atmosphere is harsh to the feel and is difficult to spin; if the atmosphere is warm and dry, the yarn is affected by electricity and is rough and incapable of standing the proper degree of tension without breaking, besides tending to unevenness in size; on the other hand, should the atmosphere be warm and moist, the yarn is smooth, soft, regular in size, and elastic, or in other words, possesses all the attributes necessary for the highest attainable perfection of manufacture.

Spinners are not agreed in their views concerning the proper temperature and relative humidity that should exist for the best spinning of cotton. The general opinion, we believe, is in favor of a temperature of 68 to 77 degrees, and the relative humidity 50 to 55 per cent. for carding, 55 to 60 per cent. for spinning, and 65 to 70 per cent. for weaving. This is not an unhealthy atmosphere for the work people, though the best hygienic conditions may be said to be nearer 65 degrees temperature and 65 per cent. relative humidity. The relative humidity for weaving in a cotton mill must be higher than that for spinning, so as to prevent breaking of the yarn in the loom, especially the warp. The relative humidity of the atmosphere is of more importance than absolute humidity. It is better to have a low temperature with a proper percentage of relative humidity than a high temperature and an under percentage of relative humidity.

How to best accomplish the humidification of the atmosphere in the mill is still an unsolved question, though there are in existence mechanical devices that have improved conditions very materially. The simplest method towards the perfect moistening of the atmosphere, so far as the manipulation of the stock itself is concerned, is the natural evaporation that would take place, should the flooring of the work-room be sprinkled evenly with water and allowed to evaporate naturally. But objections to anything of this kind are too obvious to be discussed. The best principle, however, seems to be suggested in this method, and any effective mechanical device that approximates it must be looked upon with favor. Its practicability is dependent upon the means by which it can be economically achieved. This form of evaporation where it is brought about naturally, or by mechanical means, must appeal not only to the scientific but to the practical manufacturer, as the thing to be effected, if possible. The late B. A. Dobson, who was considered an authority on questions of this kind, said that "to secure general diffusion and intimate and atomic assimilation" there must be some form by which evaporation can be

obtained as nature provides. He further said that "air and water so assimilated have no tendency to separate by condensation until the conditions of temperature or pressure have necessitated it." In order to bring about a natural moisture inside of a mill, Mr. Dobson suggested the utilization in some form of "shallow water troughs making the circuit of the rooms or crossing at different distances according to requirements—the surface exposure of the troughs bearing a relation to the cubical contents of the room and relative humidity required." About these troughs, for example, are placed heated steam pipes in order to warm the water and promote evaporation. The only practical objections to this system of evaporation from troughs are, as Mr. Dobson states it, "the time required to regulate the humidity in accordance with the requirements due to changes in the atmosphere and the expense of the installation." Therefore, if there can be devised a compact mechanical method by which this form of evaporation can be brought about, it will be a great step toward perfecting the system of humidifying factory atmosphere.

We are almost inclined to believe that mechanical methods have been invented for nearly, if not fully, accomplishing the desired end of a natural evaporation by the passage of a thin sheet of warm water over a flat surface exposed to a rapid current of air, that carries with it the particles of evaporated moisture in such a fine state of division, as to possess all of the advantages to be obtained from Nature's process of evaporation, which means the impregnation of the atmosphere with a vapor rather than with globules of water. It therefore would seem that if natural evaporation can be effected and hastened by a mechanical means of blowing air over water, it is a desideratum that is worthy of being aimed at.—Textile American.

• • • • •

OLD-TIME TEXTILE COLORING PROCESSES.

Generally speaking, works on textile subjects are not particularly interesting except to those who are immediately concerned. Now and again, however, one comes across a writer who has the happy knack of interspersing items of a somewhat lighter character, and thus pleasantly varying the more substantial and technical portions of the subject in hand. In a German work entitled, "The Commerce and Industry of the Canton of Glarus," written by Adolph Jenny-Trumpy—which treats of the commercial relations existing between France and Switzerland from 1500 to 1800, laws for the protection of work-people, sick clubs, fully detailed statistics of the textile industries of Switzerland, etc.—a short history is given of the introduction into Europe of various processes for the printing of fabrics introduced from the East. The importation into Europe from India of printed calicos—known as *indiennes*—commenced in the 16th century, though the Indian people previously to this date had long been familiar with the arts of spinning and weaving. The writer describes three of their principal methods of printing fabrics. The first is called the *bandana* process—*bandana* signifying, in the original, to tie up—which consisted in tying up certain parts of the fabric in such a manner that after dyeing the portions so tied remained white. This process was a tedious one; but, by being repeated several times, different colors were thereby obtained. The method was used for cotton, woolen and silk stuffs. The second was the application of liquid mordants or coloring matters upon prepared fabrics. Cotton fabrics more or less bleached, were plunged in buffalo's milk in

which tannin substances (such as myrabolams) had previously been boiled; they were then wrung out and dried in the sun, rinsed lightly, again dried, stretched on a flat surface, and polished with pieces of wood. The required design was obtained by means of stencil papers being placed on the fabric, and a metal solution thickened with a little sand was applied with a brush or a kind of hollow pen. The salts of iron was prepared by dissolving iron scrapings or filings in pyroligneous acid. Clay roots gave, with alumina, a bright solid red; with a bottom of oxide of iron containing tannin, black; with oxide of iron alone, brown; and with madder, lilac. The fatty matters contained in the buffalo's milk heightened the brilliancy of the colors; and, to clean white tissues or brighten the colors, the fabrics were passed through a bath of cow or sheep dung, and sometimes through soap baths. In order to bring out the dark parts, the fabrics were painted in light yellow or pale grey shades, which were produced with different natural coloring matters, with or without alum. Afterwards these stuffs were finished or dressed with starch, shaken after drying, or polished over a table with pieces of wood if a glossy finish was required. The third process was that of the wax resist, the blue being obtained by a passage through a lukewarm indigo vat, and the red by mordanting with tannin and alumina and then dyeing at boiling point in a bath of chay roots. By successive applications of the wax resist it was possible to obtain the following colors; light and dark indigo-blue and red and pink with or without white; then some mixed shades of dark brown were obtained by topping with blue and red; and lilac, with pale blue and pink. This process was quite a labor, requiring remarkable dexterity of hand, and, above all, a large amount of patience. For articles of a very rich color the wax resist method was combined with an application of mordants; for instance, a red and black ground with a wax resist was dyed in indigo to a pale blue; then by means of a brush a yellow natural color was applied, and was fixed with alum or by oxidation in the air; while in the same way green was produced by a mixture of yellow and blue. Many centuries after, these stuffs were imitated in Europe under the name of *Lapis gros bleu*, and *Lapis gros vert*.

• • • • •

SELVAGES.

There is nothing that adds more to the appearance of a piece of cloth than a good selvage. Whether the cloth is to be used by the consumer in a grey or in some finished state, a good selvage is equally a desideratum. In those countries, where grey calicoes are used for clothing, without passing through the hands of tailors or dressmakers, an even, clean selvage is necessarily of vital importance. In goods which undergo some process of finishing before they are purchased by the consumers, the qualities required to form a perfect selvage have to be considered from another standpoint. In these goods the selvages are usually cut away when the material is being made up into a garment. Ladies, however, when purchasing dress goods whether made of silk, wool, or cotton, would hesitate before buying from a piece of material which was bordered by even one ragged selvage, rightly judging that a manufacturer who would be content to produce cloth thus imperfectly made could not be trusted to turn out pieces free from imperfections between the selvages.

Those who are able to keep their looms, from one year's end to the next, upon one make of cloth, soon ascer-

tain the best method of producing a slightly selvage; but in these days of constant changes many a one finds to his cost that this question is not to be lightly considered, and that he has to use no little ingenuity in order that his pieces may all possess this most necessary quality. The ventilation of this subject, says the Boston Journal of Commerce, will do readers no harm; even those who at present experience no difficulty, may, by having their attention drawn to this question, glean something which at some future period may be found of service. It is absolutely necessary that the formation of selvages for cloth to be used in the grey should be considered separately. While in cloth, which is used in the grey state, the appearance of the selvage only has to be considered, other points have to be regarded when the material has to undergo some finishing process before being sold to the consumer. In the former, it is only necessary that the selvage shall be neat and regular, not too thick and coarse, and without loops of weft disfiguring the outside edge. The selvage has, of course, to be strong enough to withstand the pull of the weft and the blow of the reed. The usual plan is to draw two ends of the warp into each dent of the reed.

In many makes of plain cloth, warp ends similar to the body of the cloth may be used; but in some cases, where those ends are made of fine twist, it is both cheaper and better to use coarser ends, and at the same time to employ a smaller number. In other makes of heavily picked cloths it is necessary to use selvage ends of doubled yarn. When these threads are drawn in, one in each heald, and three or four in a dent, a very much neater selvage is made. In some cases it is found necessary to give the weft, when leaving the shuttle, extra drag in order to prevent it from forming loops on the outside edge; but if the looms are kept in good order, this should only be required under extreme circumstances and for certain makes of cloth. As this drag is, of necessity, trying to the weft, it is obvious that it should not be used unless absolutely essential. It is, however, in cloths which have to undergo some finishing process that this question assumes its most difficult aspect, especially upon cloths which are made by treading the healds is some other way than that employed in making plain clothes.

When cloths have to be finished, it must be considered whether the selvages will stand the different processes which have to be employed. If made too tight (and a tight selvage for a grey piece will probably give the neatest selvage), the cloth in some cases will be found to cockle in the centre, while in others the selvages will curl. They have also been known to split, making a rent in the cloth. All these faults cause annoyance to the merchant, and no considerable loss to the manufacturer. It is necessary to consider each cloth upon its own merits; but with the exception of a few light fabrics, which undergo a finishing process, when considerable side strain is used on the selvages it would seem to be quite necessary that they should not be as tightly woven as the body of the piece. Starting from this standpoint, it is evident that the method employed, say, for making the selvage for a weft sateen would not be at all suitable when used for one for a drillette. In nearly all kinds of cloth manufactured by a fancy weave, it is usual to make what is called a plain selvage, or, at any rate, one which has the appearance, when finished, of being plain.

When sateens were first made, considerable difficulty was experienced by some manufacturers in making plain selvages sufficiently slack. Considerable claims for damages resulting from cracked selvages, had to be faced by them,

and yet there is probably no cloth in which a good slack selvage can be so easily made, especially in those kinds where a great number of picks of weft are employed. In fabrics, where the size of the warp largely exceeds the size of the weft, it is found that the warp does not, in weaving, contract as much as when the counts of the warp and twist are more equal. Hence by having the selvage ends much coarser than the warp ends in the body of the cloth, and also much coarser than the weft, a slack selvage of the corded class may be obtained. In fine reeds it would be necessary to draw these ends two in a dent, and even in some cases to miss a dent. By employing very coarse threads in this manner, the weaver is assisted by a decrease in the breakages of the selvage ends, and the appearance of the ribbed selvage is very good. Difficulty has also been experienced in working the warping mill and slashing frame owing to the counts being so widely different; but this difficulty need not exist. It is obvious that an end of 20's twist will occupy more room upon a warper's beam than one of 60's twist, and in warping much has to be left to the discretion of the warper, who even with the greatest care finds it difficult at times to avoid making beams, the selvages of which may in the slashing frame come off either too slack or too tight. Some manufacturers to avoid this put in their selvage ends at the slashing frame; but this system entails considerable labor and some little loss of time at the slasher.

As this means loss of time to a highly-paid servant employed upon a very expensive machine, it becomes of importance. When small expanding combs are used solely for the purpose of guiding the selvage ends to be affixed to the warping mills, much better results can be obtained. These combs are made to expand and contract quite independently of the main comb. When the selvage ends are introduced at the slashing frame, a creel is arranged for a given number of bobbins. In this creel warpers' bobbins are put, and the yarn is drawn off them in the same manner as off the back beams. Trouble is often experienced by some of these ends twisting together, and care should be taken that each end is kept separate until it has passed under the squeezing roller in the tin box. The bobbins used should be large enough to hold sufficient length for one set of back beams, so that the slasher will not have to renew them during the slashing of the set. When this is not done, it is no unusual thing to find that a bobbin has become empty before the slasher has become aware of the fact. The most convenient position for these creels seems to be about half-way between the immersion roller and the first back beam. We have seldom seen creels that would hold more than fourteen bobbins at each side; larger creels would be almost too cumbersome. Where more have been required, the additional ends have been run on to the warper's beam at the warping mill.—Textile Manufacturer.

THE DYER IS A CHEMIST.

No journal purporting to represent the interests of textile manufacturers can consider its mission properly fulfilled unless it devotes reasonable space and careful consideration to that department of manufacture where the fibre is subject to its greatest changes—changes in color that are to determine style and desirability of the finished fabric, as well as to mask its composition, or to develop patterns woven from fibres acting differently toward the dyer's processes.

The dyehouse stands alone in textile manufacturing. All other departments are concerned with mechanics, varying

the relations of the fibres, separating them in the picker, card and comb into individual units, only to recombine them in orderly and predetermined positions. The action of these mechanical processes is clearly visible and easily understood. They are developments of simple manual methods familiar to the human race from the earliest times.

But the processes of the dyehouse are invisible. The colors grow in the fibre, yarn or cloth, and the processes are to-day no more complicated than in the earliest times when sorcery, incantations, and the influence of good and evil spirits played important parts in the barbaric dyer's art. Dyeing in the textile industry is most largely represented as an independent industry, a large number of important firms being engaged exclusively in dyeing and finishing. In the dyehouse the questions of mechanical adjustment of the fibres are supplanted by the chemical questions of bleaching, cleansing and coloring.

Dyeing is pre-eminently chemistry applied to the arts. The fibre and fabric in the dyehouse are submitted to a great range of chemical processes, involving the use of a multiplicity of simple and complex materials—materials that are the products of nature and art, some handed down to us by the experience of older times, though their discovery and earlier application are shrouded in mystery.

While the simpler chemicals are used and recognized, as such by the dyer, and the dyestuffs are known by him to be definite chemical compounds, it is not common to look upon the fibre as entering directly into chemical action. Nevertheless, the fibre, while often acting as a simple absorbent of dyes changed from a soluble to an insoluble condition, it as often shows the behavior of a complex chemical compound with properties, especially in the case of wool, quite contradictory under varying conditions.

The true chemical nature of fibrous materials is still a question of research. Much is known and more is unknown. It still commands the attention of some of the most learned investigators in textile chemistry. The dyehouse is therefore interesting as being a laboratory on a large scale. There are carried out processes which are fully as elaborate, fully as delicate, and fully as important, as those of any first-class chemical manufactory. If the word dyer was not so universally adopted and understood, the word manufacturing chemist would be no misnomer.

In the dyehouse are placed materials of great value, often far advanced in manufacture and dependent on the skill of the dyer for final treatment. The dyer, therefore, looks upon his position as one of great responsibility, and the manufacturer feels that excellence of work in the dyehouse is the place upon which his reputation and profit most depends.

What is the first question the purchaser asks over the counter? Is it not as to color? Do they not demand a rock-bound fastness equal to the Rocky Mountains, combined with the brilliancy of the diamond? Does not the importing tailor gravely add \$10 to the cost of a suit of clothes on account of the dye, notwithstanding the fact that often not even the wool in the grease was imported, and, notwithstanding the fact that no mill, domestic or foreign, can put as much as \$1 on to four yards of cloth in the shape of dyestuff. This shows the value the public puts on the dyer's art, although the public still complains that colors fade more to-day when worn in bright sunlight, and all conditions of weather, than did some dull fabric of our ancestors, which was carefully shielded, and packed away in trunks from harm and deterioration. Modern fabrics are made for exposure, and the severe treatment of an active, careless and energetic people.

Intrinsically modern colors are handsomer and faster and more brilliant than corresponding ones of an earlier day. The world has not lost, but gained by the passage of time. Alizarin is superior to madder, as any pure product is to its corresponding crude material. It is true that the enthusiast's dealer in Oriental rugs and fabrics asserts the superiority of the unfading vegetable dyes used in the Orient, at the same time he exhibits with pride his rug or fabric faded beyond recognition of its prime glory.

But the question of relative value of vegetable and artificial dyestuffs is one meriting special and extended treatment from the pen of some expert. The main purpose of this article is to speak of the dyer as a chemist, as one to whom the fibre, the water and all materials used are chemicals to be controlled and combined for the attainment of the best results. The dyer, who gets good results at all, is, by this very fact and the intelligent use of his materials, a chemist.

It was thought at one time that the constantly increasing number of artificial dyes, combined with improvements in the preparation and purification of natural dyestuffs, as well as improved processes in the art of dyeing itself, would so simplify the work of coloring as to make it less exacting and within the capacity of men of less intelligence and training than formerly. The dyeing was to be done in the future by workmen who could turn steam off and on. When we first realized that we had seventeen shades of violet, almost as many of blues and greens, numerous yellows, oranges and browns, as well as every tone of pink, scarlet and red, we thought that any shade could be easily obtained. The old dyers wrote articles showing how they got shades by long and laborious processes that now were obtained in one dip. But no, with increased facilities come increased demands. Materials and processes are used in dyehouses to-day that were unknown ten years ago. Tin spirits and iron liquor are gone by, crude products have given place to refined.

Hitherto, chemical reactions at exact conditions of temperature and special physical conditions are being introduced into the dyehouse. The old dyer did well to give his son the best education obtainable, but the dyer of to-day must give his son technical training in the best schools. The dyer of to-day is well read, well posted and is displaying a high degree of intelligence in his work. The technical journal of to-day to succeed must recognize that in this department it must cater to readers at once critical and progressive.—
W. C. D. in Textile American.

HINTS ON WEAVING.

In the manufacture of cloth by far the greatest share of good work falls upon the weaver. It is here, to a very great extent, that the profit is made. It too often happens that the yarn has been spoiled in the preparation, causing more work and less money for the weaver, perhaps for weeks, in some cases even for months.

Keep the Looms Running.—To keep the looms constantly going is the greatest point to be aimed at, and is beneficial to both master and weaver, but it is also necessary that the cloth should be as free from faults as possible. It is to the weavers' interest, because as they are paid for the amount of cloth woven, when the looms are stopped the weavers' earnings are stopped also—hence the necessity for keeping the looms running. In a large majority of cases the tacklers or overlookers are paid on the weavers' earnings, and this again is another reason for keeping the shuttle moving. It is beneficial from the master's point of view, in

giving an increased production, and with the out-turn being greater, and the standing expenses being the same, the extra production is got free of standing wage cost. Let us look at the matter from a weaver's standpoint, and emphasize what we have already said, keeping the looms running. To do this there are many little things to be seen to, some of which we will not glance at.

Knots.—We must admit that the best of twist will sometimes break, and is joined together by a knot. In making these knots, it is often the case that about half an inch of yarn is left behind the knot, and in this way passes through the sibe and on to the weavers' beam. If this is not seen and cut off by the weaver, it may get twisted around some other threads and break them out when it gets to the shed. A good plan is to periodically, say every quarter of an hour, go round to the back of the looms and cut off all knots and lumps, and by so doing keep the yarn free from anything that is likely to break the threads.

Observation.—To avoid probabilities of looms having to be stopped for slight repairs, a good weaver will occasionally overhaul the leathers, and notice how long each one is likely to last, so as to have it replaced before a smash, or trap has been caused by its breaking. The same remarks may be applied to other parts of the loom, as, for instance, a nut or bolt may become loose at some vital part of the machine when, if the reed case is not in good order, it may cause a breakage of a considerable quantity of yarn.

Oiling.—Another thing to observe is to see that looms are kept constantly oiled at least twice every week. Probably it is better to oil three times a week, and use the oil more sparingly. Care must be taken not to use too much, so as to prevent it splashing on to the yarn, and thus get woven into the cloth, when it has often to be washed out by the weaver. A little care and forethought will avoid this waste of time. There is always more or less oil and dust about, which gets into the bearings, and to clean them out a good plan is to oil occasionally with paraffin oil.

Smashes or Traps.—As we said before, traps may be considerably reduced by the weaver being alert, and keeping an eye to those things which are most likely to go wrong. Even then they cannot always be avoided, however careful we may be. When a trap is made, and should it not be so bad as to require the warp to be redrawn, it is useless to waste time over it in sighing and lamenting; much better is it to set to and get it made right as quickly as possible, so as to get the loom running again. Some weavers prefer to keep the rest of the looms running whilst they are piecing up the break, others stop all their looms so as to give all their attention to getting over it, and it is preferable to do so, as you cannot see if anything is going wrong without coming from the back of the loom; besides it also takes up time. Get clear of the smash and you can give undivided attention to all your work. There is one point under this heading which ought to be mentioned, that is, if a shuttle in a loom is being frequently trapped, that loom must be out of order, and the weaver ought not to be blamed by the cloth-looker, but we fear it too often happens that this might have been remedied by the overlooker.

Catching Cops.—There is no doubt it is in the catching of cops that the greatest amount of time is saved, and more especially so, if coarse counts of weft are being used. If a weaver will make it a practice to catch as many cops as possible, the gain will be considerable over one who allows the loom to run until it stops of its own accord. There are certain classes of cloths that require to have the pick found, or a fresh shuttle to be put in the same shed and the same

place as the previous cop finished at, so as to make a perfect joining. For doing this the weaver is paid a certain percentage extra. Now if a weaver can get into the habit of refilling the weft before it breaks, he gets this extra profit, not only so, but the looms are kept going better, and thus it is a double advantage. Again, in coarse weft the shuttle becomes empty sooner, and if caught and refilled before breaking, the weaver gains the greatest part of the percentage allowed for stopping. This practice of catching the cop cannot be too highly commended. It is beneficial to both the employer and the employed, and much better cloth is made.

Brake Motion.—We often find, when the loom stops through the weft being broken, that the shuttle is either at the wrong end for convenience or it is in the middle of the shed. Is it not to the interest of the overlooker (as well as the weaver), for him to see that all the looms stop at the setting-on side? It is only a question of manipulating the brake. Note what a considerable amount of time is saved by the weaver not having to turn over the loom every time it stops of its own accord. I have known a few cases where, when the weft breaks, the shed and brake motion have been set in such a way that the shuttle has been thrown upon the cloth. How few of the overlookers see to this? Yet it is to their advantage, besides showing their ability by having the looms so much under control.—*Indian Textile Journal*



BRITISH TRADE WITH CANADA.

Subjoined are the British Board of Trade figures of trade with Canada in textiles for April and for the first four months of the year, being the last to hand:—

	Month of Apr.		Four months to Apr.	
	1903.	1904.	1903.	1904.
Exports to Canada.	£	£	£	£
Wool	311	4,771	10,706	13,382
Cotton piece-goods..	44,062	55,381	318,830	342,353
Woolen tissues.....	26,279	28,430	185,646	247,937
Worsted tissues.....	47,539	65,516	358,378	349,756
Carpets	21,996	18,078	156,975	156,158
Haberdashery	26,729	22,054	100,450	148,739
Jute piece-goods....	14,212	20,257	65,249	67,123
Linen piece-goods...	10,137	11,621	75,232	76,113
Silk, lace.....	1,250	192	4,432	1,814
Silk, articles partly of	3,251	3,780	28,196	29,302
Apparel and slops...	24,536	22,131	135,691	129,971

No imports in textile goods are reported.



DECAY OF WILTON.

A report from Wilton, Eng., says: "The evil effects of unfair foreign competition are strikingly illustrated by the fact that the Royal Axminster and Wilton carpet factory has closed its doors, for the time being at least. The industry has been killed by the foreigner, who has introduced an inferior article, and has displaced the home production, which has for centuries claimed the old parliamentary borough of Wilton, the seat of the Earl of Pembroke, as its centre. Many hands have been thrown out of employment, and there is little prospect of the works being reopened. The buildings have been offered to the War Office for a clothing factory, but they are not regarded as likely to suit military requirements. The carpets which now adorn the floors of Buckingham Palace and Windsor Castle were framed in the Wiltshire town. The town is now a scene of industrial decay.

AFFAIRS OF THE CANADA WOOLEN MILLS.

At the request of some of the shareholders of the Canada Woolen Mills, Limited, John F. Morley, for years the successful manager of the Waterloo, Ont., Woolen Mills, and for a time general manager of the company which combined the five mills forming the Canada Woolen Mills, Limited, prepared the following review of the company's affairs from the time of its formation, and gives his views of the causes leading up to the present embarrassments:

It was in the summer and fall of 1899 and early in 1900 that the arrangements for the amalgamation were made. At this time the price of wool and woolen stocks advanced to as much as 30 to 40 per cent. over what they were a few months previous. It was agreed that all stocks purchased before the advance should be taken over by this company at invoiced price, with freight and interest added. At stocktaking I found that most of the stock was purchased at the advanced price. We, therefore, started out with a very high priced stock, with no corresponding advance in our goods. Wool merchants will bear me out in stating that there never was a greater fluctuation in prices, in their experience, than occurred at the time of our formation and the ending of our first year. Most of the stock was taken over at the top of the market, and at the end of the year there had been a drop of fully 33 per cent., and stocks were taken at the low prices then prevailing, regardless of cost.

At stock-taking we showed a total loss of about \$100,000, the bulk being at Hespeler and Carleton Place.

In order to account for this it will be necessary for me to go into details at these mills. As you know, the arrangements were that Mr. Brodie be given full control of the Hespeler mills, and myself control of the others. At the Hespeler mill, the first few months after starting, Mr. Brodie purchased altogether beyond the requirements of the mill. Consequently part of it had to be transferred to our other mills, and these mills had to share part of the loss, shown at stock-taking. I estimate that we lost, with the stocks on hand and these purchases, fully \$75,000.

At Carleton Place considerable loss was also sustained by our having to work up the odd yarns into job goods at both mills. A further loss was caused by our running the mills while extensive alterations were being made, but as we were anxious to keep the help together and to get the goods on the market this was done. In addition to this Carleton Place was made to show a greater loss than they actually had, because a part of the loss made by the Maple Leaf mill was charged to these mills.

Without going further into details, I estimate that our loss for the first year can be accounted for in this way:

Loss, shrinkage in values.....	\$75,000
Samples, etc.	5,000
Manufacturing	20,000

The loss in the samples was caused by our having to buy them over from the old companies, but not taking them in stock at the end of our year.

After the ending of our first year I could see that I would never be able to get the mills into a satisfactory shape unless some changes were made. All the objects for which this company was formed were being lost sight of, the main object being to reduce the lines and confining each to its own. I would visit the mills, and find cuttings of exactly the same thing in all of them. There was no system in our selling department. Instead of the mills controlling the agents, the

agents were controlling the mills. The Maple Leaf department was causing no little trouble, so I advised the directors to get rid of it. Also to remove the head office to Waterloo county, where the bulk of our manufacturing was done. If this were done, I had hoped, with the assistance of Mr. Davidson and his office staff, to have been able to produce some order out of the confusion into which our agents were dragging us. I spoke to the directors about these matters again and again, and both Mr. Brock and Mr. Long advised me to get rid of the Maple Leaf department first, and not try to take too many changes while crossing the stream. In this way I was defeated in my objects. I had no control over the agents, and the mills were constantly being dragged into trouble. Some people may be of the opinion that an agent's whole duty is to sell goods. We are dealing with an intricate and complicated business. An agent can help or ruin a mill. In our case we had four or five agents giving advice to each mill. Our samples are furnished in sheet form, with from twenty to thirty patterns in each sheet, and it is expected that an agent will confine himself to a few patterns in each line. If this be done, the agent can help the mills; in this way he succeeds in getting a number of houses on the same patterns; and if we succeed in getting even half a dozen houses on the one pattern, and each orders only one piece, it gives the mill a fair run, with fewer overloads at the end of the season. Instead of standing by the patterns submitted to them they were constantly substituting patterns from one line to be made in another. To illustrate the troubles this leads to we will take our frieze trade: Take two lines, one at 60 cents, the other at 75 cents. The 75 cent line is selling very well, but a buyer comes along who hopes to get an advantage over other customers buying this line, and he orders a number of shades out of it to be made in our 60 cent cloth. The order is sent in, the goods are made, but do not turn out like the original because the stock used is inferior to that which is in the cutting given out of the higher line to the customer. The goods are sometimes returned as not being up to sample. The mill not only finds itself with the goods on hand, but also the different shades of yarn and batch-ends.

The salesman from a mill who understands the difficulties this leads to would never accept an order of this kind. Our agents were constantly leading us into these difficulties. My whole second year was put in under a strain of almost constant annoyances. I could see that the only hope for success was to get a salesman for each mill. This I recommended to the directors, but not before I had tried and failed to get our head office away from our agents, so I could be at the mills and have some control over our own business. Toward the end of my second year I wrote both Mr. Brock and Mr. Matthews, explaining as fully and carefully as I could the difficulties, and sent copies of the letter to all the directors, except Mr. Eaton, who, I understood, was sick at that time. Mr. Randall, Mr. Long and Mr. Benson approved of the recommendations I had made, and wrote me to that effect. I thought these recommendations would be brought before the Board and carefully considered. Mr. Brock came back from Ottawa with Mr. Kendry practically engaged; and my recommendations were never considered.

If you believe that the agents are not the cause of our trouble, consider the following: I left Waterloo, where I had full control for twenty-five years, had the confidence and respect of all the directors; and I succeeded in making a success of that company. Mr. Millichamp will admit that we stood at the head of all the mills in Canada on our class of goods. Why did I fail when I took the management of this company? Simply because I lost control of the agents, and the agents tried to control the designers in the mills.

Why did Mr. Morrison, who had done the best that could be done with the machinery at Lambton, fail at Hespeler, and as soon as he parts with the company goes to Beauharnois, and succeeds beyond any previous manager that mill ever had.

Why did Mr. Berry fail after succeeding at the mill he left? Why did the manager who succeeded him fail?

Why did six or seven different managers at Carleton Place fail? Surely we had some good men among them.

Why did all our mills go down when other mills were succeeding?

How is it that the only successful mills in the cloth trade in Canada to-day are the ones who sell their own goods? They succeed simply because they have practical salesmen who understand the inner workings of the mill, and work to the mill's interests. April, 1902, I wrote Mr. Brock as follows: "I beg of you not to make any mistake in this matter. You may change the general manager and the local manager at every mill as often as you like, but unless you change the selling department they will all fail." At the same time I made the offer that if they would give me one of the mills, with a salesman under my control, I would stake my reputation as a woolen mill manager that I would make that mill pay. But some of the directors could not see with me. At the end of the second year I was compelled to leave the company, leaving it in about the same financial position as it was at the end of the first year.

Before I left, Mr. Millichamp did all he could to get me to cut the prices on our frieze. This I refused to do, but as soon as I left the company the price on some of the lines was reduced 10 per cent., and in order to make a good showing in being able to turn out more satisfactory goods the quality of some of the lines which were sold largely, was improved at an advanced cost of from 15 to 20 per cent. I knew this was being done, and I spoke to Mr. Brock and Mr. Matthews in reference to it, and told them that if the management continued on these lines I estimated their loss would be fully \$40,000 in six months. They continued making them, and the loss for that season was fully \$50,000. When the stock was taken and the result known, then came the struggle to get prices back again. After selling lines at 80 cents on the dollar, it was hard to place orders at an advance enough to make a profit, and they did not sell enough to keep the mills running. As a result of all this we see the two mills at Carleton Place closed; Waterloo struggling to keep running, and only running at a loss; the mill at Hespeler only about two-thirds of their machinery employed, and the help discouraged and disorganized.

Mr. Morley concluded with the opinion that if the shareholders worked in harmony for the future the business could yet be recovered from the wreck in which it has found itself.

Since last issue the Master in-Chambers at Osgoode Hall, J. S. Cartwright, the official referee in the case of the Canada Woolen Mills, Limited, has given his decision upon the application of the liquidator, Geo. Davidson, who asked that the mills be allowed to run till December. In making the order Mr. Cartwright says:

"The only order that I think can properly be made is that the liquidator be empowered to carry on the business under the control of the inspectors for a period not longer than July 16th, and that all necessary proceedings be taken in the meantime so that the mills may be sold not later than July 2nd to the 7th.

"This will require a good deal of consideration in view of the evidence of Mr. Moore as to an annual depreciation of ten per cent.

"Much will depend on the tariff arrangements of the country. If these are modified in a sense favorable to the woolen business, both shareholders and creditors will derive the full resulting benefit. If there is no such change, they will not be worse off than they are at present.

"The action of the Government on the tariff changes will not be known until the end of the month. Had there been any margin for the creditors in the way of contribution by the shareholders, so that such a substantial sum as \$50,000 or \$70,000 could be collected if necessary to meet the expenses of further unprofitable operations, I might have felt disposed to allow the shareholders to make the experiment they desire. They would then, at least, show they had the courage of their opinions, but I do not think this can be done."

In accordance with this, instructions have been issued through Cassels, Cassels & Brock, solicitors, Toronto, to call for tenders, which will be open till the 28th June, under conditions named in the advertisement elsewhere.

BROCKVILLE HAT WORKS FAILURE.

From time to time accounts have appeared in this journal of difficulties which have arisen between the members of the firm of Saulnier, Decelles & Altman, proprietors of the Union Hat Works at Brockville. When the works were removed from St. Johns to Brockville less than two years ago, the town giving a bonus of \$20,000, we had our doubts, and they have been realized, the firm, from which Altman retired some time ago, and was criminally prosecuted for damaging the machinery, having made an assignment.

On April 28, 1902, a bargain was entered into between the town and Saulnier, Decelles and Altman for the erection of a factory. A by-law to give a bonus was defeated the first time, but, on being submitted a second time, with some alterations, was carried. The town was to give \$19,000 in cash and a site worth \$1,000. The money was not all to be paid at once; \$5,000 was paid on the completion of the building and \$7,500 when the machinery was installed. \$500 was paid the first year, and \$1,500 per year was to be paid for the next four years. The machinery installed is said to have cost \$26,000, and on this and the building the town holds a mortgage as security. Last year the company received its \$500, so that altogether it has been paid \$13,000, and Saulnier & Decelles say that the \$7,500 has been earned this year. The town is the only creditor having any security on this business, though the Bank National are also creditors for \$13,750, less security to the amount of \$4,000 on the St. John's empty building. The pushing of this claim by the Bank National, together with the cutting off of trade by the Toronto fire, is given as the reason for the assignment. There are also United States creditors to the amount of about \$6,000, and Ernest Hersberger, of Montreal, has a claim of about \$14,000. At the meeting of creditors, Sheriff Dana, the assignee, submitted a statement showing the assets to be \$45,140.20, made up of \$17,490.30 stock, \$15,659.90 machinery and \$12,000 for the building. The liabilities are \$39,167.29, which does not include the mortgage of \$20,000 held by the town. There are also preferred claims for taxes, water, etc., to the amount of \$779.10, and also a bill of \$761.21 for wages. Messrs. DeGuise, Hersberger and H. A. Stewart were appointed inspectors. Saulnier has offered to pay 25 cents on the dollar if Decelles would withdraw, which he has agreed to do. This offer is satisfactory to the Canadian creditors, La Banque Nationale included, but the United States creditors ask for further details before consenting.

Decelles has also made an offer of \$14,000 to the town providing the town would turn \$2,000 of that over to the assignee for the benefit of the creditors and take the balance, \$12,000, in a mortgage. This mortgage of \$12,000, Decelles says a capitalist associated with him will be willing to wipe off in six years at the rate of \$2,000 a year. A legal difficulty comes in the way, as the council could not consider such a transaction without referring the matter to the people. If Saulnier's offer is not accepted the inspectors are authorized to dispose of the assets at once. Meantime the works are closed, one hundred hands being thrown out of employment. The people of the town look forward hopefully to some arrangement being made by which the works shall be reopened.

TEXTILE TARIFF CHANGES.

The budget speech of the Finance Minister, which has been so anxiously awaited by the woolen manufacturers, was delivered on the 7th inst., and announced several changes of import to the textile trades. The following are extracts taken from the Globe's report of the portions affecting these branches:

There was a visible quickening in the interest with which the House and the galleries hung upon the utterances of the Finance Minister, when he approached the fiscal policy. The announcement that the German surtax would remain in force was received with cheers from both sides of the House, and the tariff changes were greeted with hearty demonstrations of approval by the Government supporters. Another outburst of cheering greeted the announcement that the principle of preferential tariff within the Empire, in which Canada led the way, had been accepted by the British South African colonies and would go into effect on July 1st next. Upon these questions, Mr. Fielding said: Last year we introduced, in connection with our tariff legislation, an important change which we believed was rendered necessary for the defence of Canadian interests. We thought that one of the great nations of the world had not treated us as fairly as we ought to be treated, and in self-defence we adopted what was called the German surtax. I have nothing new to add on that subject, except to call the attention of the House to the effect that that surtax has had upon trade between the two countries. Prior to the adoption of the surtax, the imports from Germany to Canada were increasing, under the operation of the surtax not only has the increase been arrested, but there has been a very considerable diminution. For the ten months from the 1st of July, 1902, to the end of April, 1903, the total dutiable imports for consumption from Germany amounted to \$8,648,600, while for the corresponding ten months of the current fiscal year, they only amounted to \$5,367,162, a falling off of \$3,281,438, or a decline of 38 per cent. To illustrate in a concrete way the result of the surtax, the importation of raw sugar might properly be referred to. During the last fiscal year 174,000,000 pounds of this commodity were imported from Germany, but since the surtax was applied not a pound has been imported under it from Germany. All that trade has been diverted to the British West Indies, including British Guiana. (Cheers.) The importations of raw sugar from the British Indies, including British Guiana, for the ten months ending April of the current fiscal year, amounted to 188,000,000 pounds. For the corresponding period of the previous year the imports from the British West Indies amounted to 46-

515,355 pounds, estimated from British Guiana, 23,000,000 pounds, in all, 69,000,000, as compared with 188,000,000 pounds for the same period of the current fiscal year. Statistics show that the surtax has resulted also in reducing the importations of woollens, cottons and silk goods, and articles of iron and steel. There is nothing new to be said on that question. We regret that we felt obliged to take the step, and we think that on the whole it has operated to the advantage of Canada. It has certainly commanded the attention of the wide world. I think that the almost universal opinion has been that the Government of Canada were fully justified. He then referred to the preferential tariff, which would be continued in favor of Great Britain, and the principle of which had been already adopted by New Zealand, and was about to be adopted by South Africa. Regarding this, he said: "Some months ago, a conference was held at Bloemfontein of the various colonies of South Africa. At that conference there were represented the various States in South Africa—Cape Colony, the Transvaal, Southern Rhodesia, the Orange Free State and Natal. They agreed to follow in principle the example of Canada, but it was necessary for their various Parliaments to take action in carrying out that principle. We now know that recently action has been taken by those colonies and that on the first day of July next, the principle of the preference will be adopted throughout all of the South Africa colonies. Whether or not this preference will in all respects be exactly adapted to our conditions is a matter to be considered hereafter. But all I am claiming now is that when Canada led the way, in 1897, she was leading in a movement which was destined to be of vast importance to Imperial interests everywhere throughout this world."

Regarding tariff revision, he said that before the last revision a commission, composed of members of the Government, was appointed to investigate the subject in all its bearings, and before any general revision can take place, some such commission will be appointed again. He then foreshadowed the lines on which such revision would take place. He said: "We have to-day practically three tariffs

the British preference, the general tariff, and the German surtax. I think it would be found wise in any revision of the tariff that may take place to continue these distinctions, and perhaps to deal with them more in detail. We should still have separate tariffs to apply to separate countries, in order that we may be able to deal fairly with the countries that want to trade with us, and to deal less generously with those countries which pursue a somewhat hostile course towards us. I think it would be well for us to have a minimum tariff of a general character and a minimum general tariff, and the British preference below that as we have it to-day. The maximum tariff would only be applied to those countries which pursue, if I may so call it, a hostile policy. I do not mean by that to say that they have any hostility to us, but simply in the carrying out of their own affairs, they adopt a trade policy which discourages trade with us. In that case they cannot complain if we have a maximum tariff, and though we should guard against having an extreme tariff, we would be justified in saying that the tariff would be materially higher than the tariff which we are prepared to extend to other countries, which are willing to trade with us on fair and reasonable terms. Of course where there are favored-nation treaties in existence, they have to be considered, but the principal nations which to-day adopt a high tariff policy have not any favored-nation arrangements, and therefore I think our

hands will be free. I think that on this line, guarding carefully against extortionate duties, but also making a distinction between the countries which wish to trade with us and the countries that do not wish to trade with us, I think we can devise a tariff which will be fairly satisfactory to the country.

R. L. Borden—I do not know whether I quite follow the hon. gentleman. Is it his suggestion that we should apply a higher tariff to other countries which have high tariffs against us, although they may treat us exactly in the same way they treat all countries?

Hon. Mr. Fielding—Yes, I think we should do that; although if there be special cases of countries which treat us with exceptional unfairness, we would still have to deal with them by special legislation, as we have done in the past. One advantage which we might derive from the treatment of this question I have suggested is that we could deal with separate articles. Very often a general rule will work out some disadvantages when applied under our present system. Our British preference is one-third off everything, and there may be cases in which that works unequally. There may be cases in which we could afford the one-third off; there may be cases in which we could afford more than one-third off. But, sir, though we speak of that as an outline of the method by which there might be a detailed tariff change, we have to consider the question of things as they are to-day. We desire to deal with certain things as they present themselves to us to-day. We desire to deal with matters of urgency, and reserving the question of a more general and detailed tariff revision until an early date. I would say hopefully next session, but, at all events, as soon as a proper enquiry can be made.

THE WOOLEN INDUSTRY.

One of the first matters to which I wish to make reference is the woolen industry. Very much of the criticism of the tariff respecting the woolen industry is, I am inclined to think, unjustified. What I mean is that as respects those industries no amount of tariff could save them from trouble. From the information I have received, I may say that in every one of these industries there has not been the perfection of management which is necessary in these days of keen competition. I am afraid that they have not all put themselves in a condition which would enable them to fully enjoy the benefits which the tariff already holds out to them. But, while there may be cases of that kind—and my information is that there are such cases—still the representations that have been made to us lead us to the belief that the woolen industry is suffering severely from competition, and we propose to deal by a special item in our tariff with the industry. The complaint is made very largely by our woolen manufacturers, and by the various public men, who sympathize with them, that, although on the better grades of goods, they can fairly compete with all persons, even the British manufacturers, a very large proportion of the imported British woolen goods coming into Canada are really shoddy goods of an inferior character, against which we ought to legislate; and it is alleged that any increase which we might make on the woolen duties would have the effect, not of shutting out the purer woolen goods, but the shoddy goods. That is argued with much force, and I am inclined to believe that there is something in it. However, we propose to deal with the matter in this way: Our present duty on the class of goods which may be described as cloths,

tweeds, overcoatings, and goods of that character is 35 per cent., subject to the preference, which brings the duty on British goods down to 23 1-3 per cent. We do not propose to increase the general tariff, but we propose to fix a limit on the extent to which the preference shall apply to these goods. We propose to fix a minimum tariff of 30 per cent. on this class of goods coming in under the preferential tariff. This change will apply to all woolen goods coming in under the preferential tariff. It will apply to all woolen goods mentioned in the tariff item 394, with the exception of blankets, flannels, bed comforters and counterpanes, which are placed in a group by themselves.

TWINE AND CORDAGE.

We deal in a similar manner with the item of twine and cordage. These goods to-day are subject to a 25 per cent. tariff, subject to the deduction under the British preference, which brings the rate of duty down to 16 2-3 per cent. This is a lower rate of duty than even the most moderate tariff man usually is willing to impose, and we propose to fix a minimum duty of 20 per cent., ad valorem, on that class of goods coming in under the British preference. That refers to twine and cordage, but does not touch the privilege already granted to fishermen, and does not touch binder twine. While in the items I have mentioned, the degree of preference we have been giving may work inconveniently, and it may not be inconvenient to grant a less preference than one-third, in other items it may be equally convenient to grant more preference.

NECKWEAR.

We have had some representations from the manufacturers of neckwear, who have made it clear that they suffer some disadvantages, very much of the same nature I have mentioned in connection with certain classes of imports, that is to say, that their article comes in under the British preference, while they are obliged to get the raw material from countries to which the British preference does not apply. We therefore propose to provide a special rate of 10 per cent. for silk fabrics when imported by manufacturers of men's neckwear for use in their factories under regulations to be made by the Minister of Customs.

TO DEAL WITH "DUMPING."

We have some further proposals to make which, although they may not relate to details, are of the utmost importance. As time rolls on, changing conditions arise, and it is the duty of the Government and of all men in Parliament to observe these changing conditions and adapt the tariff legislation to the conditions which may confront us. We cannot meet these by mere academic discussions of the principles of free trade or protection. Mr. Cleveland, on a memorable occasion, used an expression which is very frequently quoted: "It is a condition and not a theory which confronts us." We recognize that in tariff matters, as in many other matters, and we say that many new conditions have arisen and are arising of which we are obliged to take notice. In low-tariff countries, in free trade countries, Great Britain, for example, these disturbing conditions seldom exist. England conducts her business generally upon rational lines; she sells at a profit, and what is known as the system of dumping or slaughtering is hardly known in connection with British trade; but, sir, in the case of all high-tariff countries these objectionable conditions arise. It seems to be the inevitable result of a high tariff policy that monopolies, trusts and combines will flourish. They may exist even in low tariff countries, but they flourish under a high

tant policy as they could not possibly flourish under other conditions. We find to-day that the high tariff countries have adopted that method of trade which has now come to be known as "slaughtering," or perhaps the word more frequently known now is "dumping." That is to say, that the trust or combine, having obtained command and control of its own market, and finding that it will have a surplus of goods, set out to obtain command of the neighboring market, and for the purpose of obtaining control of a neighboring market will put aside all reasonable considerations with regard to the cost or fair price of the goods; the only principle is that the goods must be sold and the market obtained. I quite realize that what I may call the extreme free trader that is, the theoretical free trader, if there be such a man, who attaches more importance to the theory than to the practical things of this life may ask, "Why should we care about that? Do we not get the benefit of cheap goods?"

If we can be guaranteed forever, or for a long period, that we would obtain cheap goods under that system, the question would be a very fair one. If those trusts and combines in the high-tariff countries would come under obligations with sufficient bonds to supply us with these goods at lowest prices for the next fifty years, it would probably be the part of wisdom for us to close up some of our industries and turn our people to other branches. But surely none of us imagine that when these high-tariff trusts and combines send goods into Canada at sacrifice prices, they do it for any benevolent purpose. They are not worrying about the good people of Canada. They send the goods here with the hope and the expectation that they will crush out the native Canadian industries, and then, with the Canadian industry crushed out, what would happen? The end of cheapness would come, and the beginning of dearness would be at hand. (Hear, hear.) Artificial cheapness, obtained to-day under such conditions, at the expense of dearness at a very near day, is not a system that we could approve, or that any of us on either side of the House should encourage. This dumping, then, is an evil, and we propose to deal with it. Perhaps it would not be too much to say that 90 per cent. of the complaints that are made to us by our manufacturers are not that the tariff is too low, speaking generally, but that this dumping and slaughtering condition exists, and that the tariff under such conditions fails to give them the protection which they would desire. Well, if 90 per cent. of these grievances result from dumping, we shall be prepared to deal with it to-day, although we do not take the matter up in detail. We propose, therefore, to impose a special duty upon dumped goods. That special duty, subject to a limitation which I will mention, will be the difference between the price at which the goods are sold, the sacrifice price, and the fair market value of these goods, as established under the customs law of the country. But they are subject to a qualification, they are subject to a limitation. If an article is sold at a lower price in Canada than it is sold in the country of production, then that will be the evidence of dumping, and the difference between the fair market value in the country of production and the price at which it is sold—or if hon. gentlemen prefer dumped—that difference should constitute the special duty with the limitations. But as respects certain articles upon which our duties are low, and upon which we grant protection in the form of bounties, as well as in the form of duties, as respects certain of these items in the iron schedule, chiefly, the limitation should be 15 per cent., ad valorem, that is to say, that special duty shall be the difference between the fair price and the dumping price, provided it shall not exceed 15 per cent., ad valorem, the additional

duty over and above the existing duty, and it is limited by these two conditions: In one case, or in a few cases of like character, the limitation is that it shall not exceed 15 per cent., and in the other case it shall not exceed one-half of the duty.

Mr. Borden—Will the hon. gentleman state what the law is now?

Mr. Fielding—There is a provision in the existing law that where there is an under-valuation you can levy your duty upon the true valuation. Suppose, for instance, that an article of which the true value is \$100 is entered at \$80, you can impose the duty on the whole \$100. You get, therefore, an extra duty in that case, if you care to look at it in that way, to the extent of the rate of duty on the difference of value. In what we propose you get the whole difference itself, that is to say, if that article is invoiced at \$80, and sold at \$80, and its fair market value is \$100 under existing conditions, you get your 20 per cent. If the article is sold at \$80, and its fair market value is \$100, under the law as it stands to-day, you get your duty of 30 per cent., it would be on that extra \$20. Under what we now propose, you not only get your extra \$20, but you get the full duty, which means the \$20 itself, subject to the limitation that it should not be greater than one-half of the duty. Thus, if the duty is 30 per cent., the extra duty, or the special duty, as I describe it, cannot exceed 15 per cent., and the whole duty could not exceed 25 per cent. The principle is that we will impose as a special duty the difference between the true value and the unfair value. But we put a limitation on that, as limitations are put upon all forms of taxation. Our information is that the average of dumping in Canada represents about 15 per cent. There are some cases in which the dumping may be more and in some in which it may be less, but from the best information we can obtain, we think that the dumping averages a cut price, an unfair price, an illegitimate price to the extent of about 15 per cent. With the limitation that we are putting on it is a special duty corresponding with what we believe to be the average amount of dumping. I may say there is also a special clause with regard to a possible evasion of this provision by the consignee of the goods, through what is called a system of consigning goods, that is to say, that the manufacturer would not actually sell his goods for duty, but he would consign them, perhaps, to himself or to an agent in Canada. He would comply for a moment with the conditions of the customs law, and then later on the dumping process might be completed. It is thought well to guard against such a contingency from the beginning; so while we propose in the first clause that the customs officers shall have the power of levying this extra duty to which I refer, we have a special clause to provide that if there be any attempt to evade these duties by the method of consigning the goods, there may be an enquiry, and the Minister of Customs may be authorized to deal with these as the circumstances may require.

The Finance Minister announced other tariff changes, among which the only item specifically relating to the textile trades is that linen manufacturing machinery is placed on the free list.

THE TORONTO FIRE.

By present appearances the burned district in Toronto is not going to be rebuilt as rapidly as was at first anticipated. This is due to a variety of causes. A good deal of the property was leasehold—most of that along the south

side of Front St. belongs to the city, and the railways have asked power to expropriate it—and much time is consumed in negotiations for renewals; some landlords will not rebuild; some firms will go out of business; some will divide their manufacturing from their warehouse and sales departments; the action of the insurance companies in increasing rates has caused some to seek more isolated situations, and under any circumstances the wholesale business will be much more scattered than formerly, for at least some time. The W. R. Brock Company and Gordon, Mackay & Co. are the only wholesale dry goods firms which have made any substantial progress in rebuilding on the old site. The former have, as already announced, bought more land and have a new and larger building under way, besides having acquired the Harvey & Van Norman warehouse to the west, which they have fitted up and occupy in the meantime. Their new building which will be four stories, with basement, will contain 94,000 square feet, or 2 1-6 acres of floor space, and will be one of the largest warehouses in Canada. Gordon, Mackay & Co. have also taken in the adjoining lot on Front street, and are erecting a new warehouse, 127x110, five stories, with basement. Both these warehouses will be fitted up with every convenience and have the very best protection against fire. The Merchants Dyeing and Finishing Co. and Garside & White are together erecting two warehouses on York street, the former, 35x110, the latter, 30x110, four stories, with basement, the first story to be concrete and the roof asphalt. Other firms are doing business in temporary premises.

In last issue we gave a list of present addresses of burned out textile firms, but it was necessarily incomplete. We now subjoin a revised and more complete list:

Allan, A. A. & Co., 18 Wellington street West; Anderson & Macbeth Co., 141 King street East; Ansley & Co., 91 Wellington street West; Baker, Richard L., Co., 60 Yonge street; Bond, H. E., & Co., 36 King street East; Borgfeldt, Geo. & Co., 88 Front street East; Boulter, Geo. E., 122 King street West; Boulter & Stewart, 204 Church street; Bradshaw, A., & Sons, 732 King street West; Brereton & Manning, 27 Melinda street; Brock, W. R., Co., 87 Front street West; Canada Veiling Co., 93 York street; Caulfield, Burns & Givon, 30 Front street East; Cockburn & Rea, 74 York street; Continental Costume Co., Cor. Mowat ave and King street West; Darling, Robert, 8 Colborne street; Debenham, Coldcott & Co., 122 Wellington street West; Dignum & Monypenny, 8 Colborne street; Drake, Hambly & Cockburn, Yonge street Arcade; F. & T. Corset Co., 10 Melinda street; Fisher, Mark, Sons & Co., 8 Colborne street; Gale Mfg. Co., 142 Front street West; Garside & White, Queen street West, cor. of Fether; Gillespie Fur Co., 91 Wellington street West; Gordon, Mackay & Co., 10 Front street West; Goulding, Geo. & Sons, 5 King street West; Greenshields Limited, Carlaw Building; Gutta Percha & Rubber Co., 15 Wellington street East; Hachborn, E. G., & Co., 46 Colborne street; Hutchison, R. B., & Co., 11 Front street East; Imperial Carpet Co., 11 Front street East; Irving Umbrella Co., 108 Wellington street West; Jenner, Sauer, Bannerman Co., Manchester Bldg., Melinda street; Johnston & Sword, cor. Colleve and Bathurst street's; Kleinert Rubber Co., 1387 King street West; McClung & Burns, 17 Jordan street; McMahon, Broadfield & Co., 40 Adelaide street West; Merchants' Dyeing and Finishing Co., 18 Front street East; Morrice D., Sons & Co., 15 Wellington street East; New Idea Pattern Co., 36 Toronto street; Ontario Neckwear Co., cor. Simcoe and King streets; Phillips & Wrinch, 5 Jordan street; Prime & Rankin, 37 Colborne street; Sanford, W. E.,

Mfg. Co., 117 King street East; Standard Cap Co., N.W. cor. College street and Brunswick ave.; Stewart, Howe & May Co., 142-144 Front street West; Tooke Bros., 117 King street East; Wyld-Darling Co., 18 Wellington street West.



THE FLAX INDUSTRY IN CANADA.

ARTICLE II.

To trace the flax-growing and linen manufacturing industries of Canada to their beginning, we have to go back to the French regime. To quote a retrospect of the textile trades, prepared by the present writer for "Canada; an Encyclopædia," it was not without effort that the textile trades were planted and nourished, both among the French and English-Canadian people, and special providences mark the history of this as of all other departments of industry. From the period of the first colonization of Canada to nearly the close of the eighteenth century, it was the policy of Governments to regard colonies as existing commercially for the benefit of the parent country and manufacturing in the colony was prohibited as far as possible in order that factory owners at home might grow rich and maintain their prices. But the very exactions in prices and the further extortion of the colonial trading companies to whom the business of the country was farmed out, drove the French-Canadian colonists first into smuggling and then into making cloth for themselves, in some cases with the consent of the home authorities, in other cases in spite of them.

In 1671 the Intendant Talon wrote that he had caused various cloths and leather to be made in New France, and added: "I have of Canadian make wherewithal to clothe myself from head to foot." The Ursuline nuns willingly assisted in this policy and taught the girls of the colony to spin and weave at their schools; and these girls going out into the world as wives of farmers and hunters carried their knowledge of spinning and weaving all over the colony. The flax spinning wheel and the wool spinning wheel and the clumsy loom were a part of the furniture of almost every house, and in course of time these industrious women provided every fabric needed for the household, from the clothes they wore to the towels used in the kitchen—the carpeting on the floor and the bed clothing under which they slept.

It was not only in Quebec but Acadia that the Canadian settlers learned to clothe themselves with fabrics of their own making. Villebon, writing in 1699 from Fort St. John, describes the settlement at Port Royal, and says: "The people feed themselves and have a surplus to sell. Flax and hemp prosper. Some use no other cloth but homespun. The wool is good and most of the inhabitants are dressed in their woollen homespun." Among the settlers, who came out with Governor Cornwallis to found the City of Halifax, in 1719, were three glovers, three needle makers, four weavers, one hat maker, and one wool comber. Lieut-Governor Francklin, of Nova Scotia, in a letter to the Earl of Shelburne, in 1766, says: "The country people in general work up for their own use into stockings and a stuff called by them homespun, what little wool their sheep produce; and they also make a part of their coarse linen from the flax they produce. The townships of Truro, Onslow, and Londonderry, consisting in the whole of 694 men, women and children, composed of people chiefly from the north of Ireland, make all their linen and even some little to spare to the neighboring towns. This year they raised 7,524 lbs. of flax, which will probably be worked up

in their several families during this winter." This and the information given in previous letters appears to have stirred up the jealousy of manufacturers at home, who looked upon the colonies as existing for the benefit of their own class, and enquiries were made as to the extent and nature of this development.

Francklin, who was evidently in sympathy with the colonists and who at the same time had the confidence of the home Government, therefore allays this jealousy by writing subsequently: "I cannot omit representing to your Lordship that this Government has at no time given encouragement to manufactures which would interfere with those of Great Britain, nor has there been the least appearance of any association of private persons for that purpose, nor are there any persons who profess themselves weavers, so as to make it their employment or business, but only work at it in their own families during the winter and other leisure time. It may also be proper to observe to your Lordship that all the inhabitants of this colony are employed either in husbandry, fishing or providing lumber, and that all the manufactures for their clothing and the utensils for farming and fishing are made in Great Britain." This may have merely meant that all the trimmings required for the completion of the colonists' clothing were imported from Great Britain, but it either satisfied the official mind at home, or else what went on in Nova Scotia was unnoticed in the rumblings that preceded the revolution in the larger American colonies. Commenting on Governor Francklin's letter, Murdock, the Nova Scotia historian, says: "It is obvious from this, as well as from a multitude of other facts that a close jealousy existed among the manufacturers of England and against any attempts in America to do anything in that line; and this narrow policy, influenced by a few avaricious capitalists engaged in manufactures, did more to lose the old provinces to England than any other circumstance."

The introduction of linen and hemp manufacturing in Canada was contemporaneous with that of the woolen industry. That mine of information on early Canada, the Relations des Jesuites, has record of proposals to introduce linen cloth-making as early as 1668, and, as rope-makers were in the colony in 1681, it is evident that a certain amount of cordage was made at that date. That the industry flourished and expanded is also evident from the records of the production of flax and hemp. In 1719, 45,970 lbs. of flax were grown, which increased to 54,650 lbs. in 1721, and to 92,246 lbs. in 1734. In 1719, 5,080 lbs. of hemp were grown, but in 1721 the production had fallen to 2,100 lbs., while in 1734, it was 2,221 lbs., showing an almost stationary trade in the home product of hemp. It may here be observed that although hemp growing was encouraged by Legislative enactments and bounties and prizes, not only under the French regime, but under the rule of Britain. In most of the provinces of Canada the manufacture of rope and twines and other hemp fabrics never seems to have become thoroughly naturalized, though the hemp plant both in its wild and cultivated state grows well. Prof. Macoun, the Dominion botanist, reports seeing hemp in the North-West growing to a height of twelve feet, and there are varieties of wild fibre plants, which should work up very successfully into binder twine, if not into other twines and cordages.

As to the flax plant, three species are indigenous to the North-West and other parts of Canada—the *Linum perenne* with blue flower; the *linum striatum* and the *linum*

rigidum bearing yellow flowers—and these, which all grow luxuriantly over a vast area of country, may one day be utilized in the manufacture of twines when machinery is invented capable of working them up to advantage. As already mentioned, the true flax plant has been grown in Canada for over 200 years, and produces a fibre of excellent quality. If improved machinery or cheaper labor could be applied to the growth and manufacture of flax, the industry could be developed in Canada, especially in the North West, where there is not only a rich soil but a vast extent of country lying beyond the line of safe wheat growing, which would be good for flax-growing. Flax matures for linen-making purposes in northern Russia nearly in the latitude of Archangel (latitude 64), and planting it in corresponding temperatures in the Canadian North-West, we could have an area of 100,000,000 acres capable of raising flax entirely outside of the great wheat belt. The Mennonite settlers in Manitoba commenced the cultivation of flax on a rather extensive scale about twenty years ago, but, except for the linen cloths they made up for their own consumption, their principal object was in selling the seed to linseed oil mills in the United States, the fibre being left to rot on the ground. It is worthy of note here that while Ontario and Quebec seed is remarkably rich in oil (about 14 lbs to the bushel), that of Manitoba and the North-West is still richer, yielding 16 lbs to the bushel, which is probably the highest yield in the world. The quality of the fibre from Canadian-grown flax is equally beyond dispute. In 1886, the writer sent a sample of Canadian flax, grown in Prince Edward Island, to Belfast to be treated and reported on. It was taken in hand by David S. Thomson, the manager of the White Abbey Spinning and Weaving Company, who had it woven into a piece of cloth and samples of yarn, which the secretary of the company forwarded with a letter in which he stated that: "The spinning and weaving have been performed under the personal superintendence of Mr. Thomson, who was most particular in testing the quality of the flax, yarns and linen. Mr. Thomson is perfectly satisfied with the trial." Another spinner, to whom I submitted the sample of cloth and yarn, said he had never seen better goods made from any selection of Continental or Irish flax.

As regards ropes, an extensive owner of both steam and sailing ships told me that the value to him and other owners of ships could not be priced, as they would be invaluable and almost everlasting if they could get ropes made entirely from such flax yarns. You can exhibit your samples with pride and satisfaction, that such results have followed your endeavors to prove that Canadian soil will grow flax to suit any manufacturer. There is no difficulty, therefore, about the growing of the raw material. The two problems to be surmounted are the invention of improved machinery for the treatment of the flax and fibre, and the training of cheap, skilled labor in the manufacturing processes. Two interesting attempts to establish a Canadian linen industry were made in Ontario at the time of the American Civil War. Then, as now, the chief centre of British linen manufacturers was Ulster, Ireland. As the American war dragged on, the opinion began to develop among Belfast mill owners that King Cotton was to be dethroned, and King Linum set up in his place. The famine in raw cotton raised the price of linen goods to such a pitch that fortunes were made in the trade, and large sums were spent in building new mills and extending the capacity of old ones. The enthusiasm spread to Canada, and in 1864 a company was formed by Andrew Elliott, Jas.

Hunt, and Calvin Clafin, of Preston, with George Stephen (now Lord Mount-Stephen), of Montreal, who started a mill at Preston, still standing as part of the woolen mill of George T. Pattison & Co. No better place in Ontario could have been selected to make the experiment, as the County of Waterloo was almost exclusively settled by German farmers, who then made, and still continue to make, the raising of flax a leading feature of their husbandry. Years before this, M. B. Perine had established large flax scutching mills—afterwards manufacturing twines and founding their present flax business—and a considerable business was done besides in home-made linens. The scheme of the new company was to manufacture linen goods and make also linseed oil and oil cake. The linen mill contained twenty-six looms, six spinning frames, with two wet spinning frames, and made seamless bags, toweling and canvas for sacks, also ropes and twines. But the mill had scarcely got into smooth running order before the war came to a close, with the consequence of renewed attention to cotton-growing in the south, and a fall in the price of linen goods. Fortunes were lost by Belfast linen merchants and manufacturers as quickly as they had been made during the war, and the Canadian linen mill was doomed to failure also. After running about three and a half years, the linen department was closed, and most of the machinery was sent out to parties in the United States at half its cost, the wet spinning frames being sold as old iron. The oil branch, however, paid well, and was afterwards removed to Montreal.

The other venture was made at Streetsville, in 1866, the capital being for id largely by Gooderham & Worts, of Toronto, and M. Perine, of Doon. The company, known as the Streetsville Linen Manufacturing Co., invested \$100,000 in its business, having a five-story mill and employing from 70 to 100 hands for a time. An account of it in the Journal of the Board of Art and Agriculture, stated that it was devoted chiefly to making double webbed linen for seamless bags, the cloth being cut to lengths of 1½ yards by machinery and hemmed by sewing machines, after which the bags were pressed and put up into bales, each containing 100 bags. About 1,800 bags were turned out per week, selling at \$10 to \$15 per bale. The mill had a capacity of making also 600 lbs. of twine and rope per day. This enterprise failed from the same causes which doomed the Preston factory, and no large experiments have since been made at manufacturing linen piece-goods by machinery in Canada. As before stated, a considerable amount of cordage and rope, made from home-grown and imported material, has always been made in Canada, a special feature being the manufacture of binder twine by modern machinery, ten factories being in existence, operating about 1,006 spindles and capable of producing about 14,850 tons of binder twine per year. As for the domestic linen industry, it has from the earliest colonization of Canada been an interesting feature of rural life, especially among the French-Canadians. Longfellow speaks of the "kirtles of home-spun" worn and woven by Evangeline, some of which would be of linen, and many writers allude to it in all phases of French-Canadian history. Visitors to the back settlements of Quebec to the Acadian settlements of Nova Scotia and those of the North-West may to-day see the hand scutcher, the hand loom, and the hand spinning wheel in many a home; and the visitor to the farmer's market in French-Canadian towns may buy home-made sheetings and towel-

ings made by the same primitive implements as were used by the peasants of Normandy in the Middle Ages. Bouchette gave the quantity of flax raised in Lower Canada alone in 1827, as 1,313,648 lbs., and the home-made linen as 10,058,696 French ells. In the early part of last century, societies for the encouragement of flax and hemp existed both in Upper and Lower Canada. In Upper Canada, in 1842, 166,881 yards of home-made linen were made, and two years later 857,623 yards were made in Lower Canada. The census of 1861 gave 37,055 yards as the product of the domestic looms of Upper Canada, and 1,021,443 yards as that of Lower Canada. By the census of 1871, it was 25,502 yards in Ontario, 1,550,410 yards in Quebec, 74,241 yards in New Brunswick, and 111,987 yards in Nova Scotia, a total of 1,771,140 yards. In addition to this, there was produced of dressed flax 1,165,117 lbs. in Ontario, 1,270,215 lbs. in Quebec, 37,845 lbs. in New Brunswick, and 111,588 lbs. in Nova Scotia a total of 2,584,765 lbs. This material was chiefly used for upholsterers' tow and for export to the United States for manufacturing purposes. There are now in Ontario about 45 mills producing "dressed line" and upholsterers' tow for the home and export trade. While this branch of the trade is well maintained, the manufacture of home-made linens is now steadily declining, the census of 1891 showing only 633,724 yards produced in the whole Dominion, divided as follows: Manitoba, 25 yards; New Brunswick, 24,022 yards; Nova Scotia, 25,000 yards; Ontario, 5,277 yards; Prince Edward Island, 8,051 yards; Quebec, 568,359 yards. Of the total production of 18,503,665 lbs of dressed flax and hemp recorded in 1891, no less than 17,887,489 lbs. are credited to Ontario.

THE DECLINE OF LINEN AND THE RISE OF COTTON.

By Albert Aftalion, Professor of Political Economy at the University of Lille, France.

At the end of the eighteenth and the beginning of the nineteenth century, the manufacture of linen and hemp constituted the most important branch of the French textile industry. The industry gave employment to innumerable hands in the country. Everywhere the country people cultivated the linen and hemp required for their own use. They also spun and wove the material themselves, and in some cases had the cloth woven by neighboring weavers. Neither cotton, a textile exotic of relatively recent introduction, nor even wool or silk, possessed an importance at all comparable to that of linen and hemp.

It is difficult to estimate the quantity of linen and hemp consumed at that time. The estimates that have been made seem to be too low because of the immense quantities of these materials used in the families. Following are the estimates made by the statisticians of the average annual consumption of textile raw materials in France during the first ten years of the nineteenth century:

Linen and hemp	187,391,000 lbs.
Washed wool	37,478,200 lbs.
Cotton	17,636,800 lbs.
Raw silk	1,873,910 lbs.

One hundred years later at the end of the nineteenth century, beginning with the twentieth, linen and hemp had lost their ancient predominance. The average annual consumption of the different textile materials in France for the years 1897-1901 was as follows:

Cotton	389,552,820 lbs.
Linen and hemp	278,661,440 lbs.
Washed wool	213,846,200 lbs.
Silk	8,818,400 lbs.

Comparing these two exhibits, we find that the development of the different branches of textile industry in one year was as follows:

	Cotton.	Wool.	Silk.	Linen and Hemp.
Beginning of the 19th century..	100	100	100	100
Beginning of the 20th century ..	2,209	570	494	148

The increase in the use of cotton has been extraordinarily rapid. In a single century the quantity consumed has increased 22-fold. The consumption of wool has increased nearly 6-fold, and of silk nearly 5-fold. On the other hand, the consumption of linen and hemp has increased scarcely one-half. Probably the actual increase is still less than this because the estimate we have made is only approximate and does not include the immense quantity of these last named fibres consumed in the household one hundred years ago.

Estimating the population of France at 27,349,000, in 1801, and at 38,962,000, in 1901, we find the per capita consumption of the different textile materials to be as follows:

	Cotton.	Wool.	Silk.	Linen and Hemp.
Beginning of the 19th century, lbs.	.66	1.32	.666	6.83
Beginning of the 20th century, lbs.	9.92	5.51	.242	7.05

Compared with the increase of 15-fold for cotton, 3 and 4-fold for silk and wool, we find the consumption of linen and hemp to have remained stationary.

In the private economy of each family linen and hemp are far from occupying the same importance as one hundred years ago, when they were the principal textile fibres in use. The use of cotton, wool, and even silk has increased at the expense of linen and hemp. The stagnation of the linen industry in the midst of the general expansion of other textile branches indicates its certain decadence.

THE DEVELOPMENT OF THE COTTON INDUSTRY.

While the linen industry has been retrograding, the importance of cotton goods for clothing and upholstery has steadily increased. A comparison of the stock of raw material obtained in France to supply the spinning mills shows the double movement of the increase of cotton and the decrease of flax. The comparison of the number of spindles and looms, however, shows still more clearly the difference between the growth of the two industries. While the number of linen spindles has decreased, the increase in cotton spindles has been continuous.

Without doubt the loss of Alsace-Lorraine deprived us of one of the most important of our cotton manufacturing districts, but the new spindles erected in the North, in the Vosges district and Normandy, have more than made up for this loss. According to the most reliable estimates, we now (1902) have 5,700,000 cotton spindles in place of the 4,600,000 cotton spindles in 1875. Thus the number of cotton spindles has increased one-fourth, while the linen spindles have decreased one-third. At the present time there are twelve times as many cotton as linen spindles in operation. The cotton spindle, it is true, does not consume as many pounds of raw material as the linen spindle, but the solidity of the linen exceeds that of cotton, and the waste in the manufacture of linen is greater, and in the cotton in-

dustry much finer yarn is spun. The average production of the linen spindle is not more than 30 or 40 per cent of that of the cotton spindle on the same size of yarn. The five and one-half millions of cotton spindles thus give a total production if not twelve times, at least nine times, as great as that of the 450,000 spindles.

Cotton thus occupies a preponderant position as compared with linen. The relative per capita consumption of cotton and linen shows that the former is only 50 per cent, in advance of the latter; 9.92 lbs. of cotton, as compared with seven pounds of linen. But in the length of the yarn the consumption of cotton is nine times as great as that of linen. Of every ten yards of yarn in the linen and cotton cloth consumed, only one yard is linen and the other nine yards are cotton.

At the beginning of the last century, linen and hemp were the most important textile fibres in use, the cotton industry being in its infancy. To-day, one hundred years later, we see how the relative positions of the two industries have been reversed. The comparative statistics of linen and cotton looms afford only an approximate confirmation of these conclusions. France has over 100,000 power cotton looms besides the hand looms. In the linen industry it is estimated that there are 22,000 power looms and 20,000 hand looms. The production of the power cotton loom may be considered 50 per cent. higher than that of the corresponding linen loom and double that of the linen hand loom.

French cotton mills manufacture annually, therefore, four or five times as many yards of cloth as do the linen looms. In fact, the looms consume far more cotton than is thus indicated. A large number of linen, woollen and silk looms are working on goods containing a greater or less proportion of cotton. In the woollen districts of Roubaix or of Tourcoing, in the linen centres of Armentieres, Lille, Halluin, Vosges and Normandy, in the silk and ribbon districts of Lyon and Saint Etienne, cotton yarn is found in looms side by side with the other textile fibres. Moreover, looms that the statistics continue to classify in the woollen and linen industries, after having been run on mixed cloths, are finally used for cotton only. If we could determine the extent of such use of cotton we would, without doubt, find that the weaving industry would show the same relative superiority for cotton as we have found in the spinning industry.

Nevertheless, the linen industry is more extensive in France than in most other countries. Many articles that have for a long time been made of cotton in other countries, England and Germany and the United States, are to-day still made of linen in France. For sheeting, for example, cotton cloth has generally displaced the linen fabrics in England and Germany, while in France linen or at least half-linen fabrics are generally used for this purpose. The use of linen sheeting, which is so extensively used in the country districts of France, seems to be a peculiar French custom. Our rural population, accustomed from time immemorial to cultivate, spin and weave the linen and hemp themselves, remain attached to these old traditional textile fibres even after their manufacture has passed from the household to the factory.

The decline of the linen industry appears to be a phenomenon common to all the countries of Europe. The causes of the decline are also general, the principal one being the competition of cotton. Other textiles have likewise done their part to reduce the consumption of linen. Upon wool, for example, rests the responsibility for part of the decline in the linen industry. Light woollen and worsted

cloth, and especially half wool goods, frequently take the place of the traditional linen blouse so long worn by our rural population and factory operatives. Jute also has come into favor at the expense of linen and hemp, and has displaced hemp for bags and baling material. Recently it has even been substituted for linen. Yarn is now frequently made of a mixture of linen and jute and the weaver has learned to manufacture cloth having the linen yarn crossed by jute or cotton.

It is, however, the competition of cotton that has caused the most serious damage to the linen industry. For a large number of articles, shirting, table linen, sheeting, curtains, knit goods and light dress goods, upholstery fabrics and sewing thread, cotton has been largely substituted for linen. At times the transition has been effected by the use of mixed goods made with cotton warp and linen filling or more rarely with linen warp and cotton filling. Manufacturers have been very ingenious in devising various combinations of color and finish to give the appearance of linen to cotton goods. In certain districts of central and western France, the people have been accustomed to a rough cloth made of yellow hemp. At first linen was substituted for the hemp, then cotton was mixed with the linen, and to-day the linen has disappeared entirely and a fabric made of cotton and jute has taken its place.

The transition from linen to cotton has been facilitated by the ability to weave the cotton goods on linen looms. Thus in different manufacturing districts in the North, in the Vosges district, in Normandy and in the West, the number of looms that have been transferred to the weaving of cotton is constantly increasing. Whenever linen rises in price a portion of the looms are changed to cotton. The same phenomenon is duplicated abroad, even in Ireland.

In modern times the preference is given to low priced goods. The call for artistic and durable fabrics disappears before the desire for cheap and attractive but less serviceable goods. The purchasing power of the mass of the people has increased, while the general leveling of conditions has reduced the proportion of those who are disposed to purchase high grade and expensive goods. Manufacturers have thus been forced to increase their production and decrease the cost of their products. This double phenomenon is manifest in many branches of trade. In the textile industry it has resulted in the extraordinary increase in the use of cotton and a reduction of the consumption of other textile fibres.

In the seventeenth and eighteenth centuries, when the use of cotton began to assume importance in England and France, the manufacturers of linen, silk, woolen and hemp goods demanded and obtained decree after decree aimed at the infant industry. They recognized clearly the power of the new rival. Cotton has taken the place of the other textile fibres because of its low cost. In some kinds of goods it has supplanted the old material entirely and in other kinds it has been mixed with the old fibres. Before the abandonment of the beautiful and expensive fabrics made of pure silk, the manufacturers of Lyons found it necessary during the recurring periods of business depression to mix silk with cotton and wool in order to bring the cost of their goods within reach of the majority of their customers. Following the example of Lyons the ribbons of St. Etienne were cheapened by the mixture of cotton with silk. The woolen manufacturing of Roubaix and Tourcoing then began to mix cotton with wool and to make cloth with

woolen and cotton yarn. In many cases the looms that were originally installed for the production of pure wool goods were changed to mixed goods and finally put on pure cottonades.

The linen industry, however, has been the principal sufferer by the advent of cotton during the nineteenth century, because linen and cotton are used practically for the same purposes. There is no question that cotton or mixed cotton and linen cloth is less durable than all linen goods. The appearance and low cost of the former assures a large market. The housekeeper no longer prides herself on the possession of household linen that has been handed down from generation to generation. More and more she contents herself with light cotton goods, fragile but of a price so low as to permit of their frequent renewal in keeping with the fluctuations of fashion. Here, as elsewhere, style triumphs over habit. Linen experiences all the rigor of what is called the law of substitution.

In the matter of first cost cotton possesses an important advantage over wool or silk. In the last decade of the nineteenth century the price of American cotton imported into France averaged \$19.57 per 220 lbs. During the same period the cost of 220 lbs. of raw silk was \$662.53. Wool in the scoured state, which corresponds to the condition in which cotton enters the mill, averaged from \$76 to \$85.50 per 220 lbs. The danger of the competition of cotton with materials that cost from four to thirty-four times as much is self-evident.

In the same way we can explain the increase in the use of jute, the price of which during the last ten years of the nineteenth century averaged but \$7.60 per 220 lbs. On the other hand the average price of French flax for the same period was but \$14.82 per 220 lbs., Russian flax being \$13.30 per 220 lbs. Why is it then that cotton goods are cheaper than linen goods with the reverse condition existing in the cost of the raw material? It is because the manufacturing cost of linen goods is much higher than that of cotton goods.

Among the Mills

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

M. Roche, Jr., & Co. have acquired the Killaloe, Ont., Woolen Mills, and have started them running.

While working at the Imperial Cotton Mills, Hamilton, Wm. Honsprger had part of his left hand cut off in one of the machines.

The Merchants Cotton Co., Montreal, who had been running on short time two months, are on full time again. Mr. Prindle, their boss bleacher, has been succeeded by J. Wardle, of England.

The insurance companies have notified the Dominion Cotton Mills Co. that they must construct a large tank near the mills at Magog and a reservoir on ground high enough to supply the tank, as an extra precaution against fire.

There is a rumor that T. B. Caldwell, of the Clyde Mills, Lanark, and the Mississippi Mills, Appleton, will also run the Gillies Mill, one of the Canada Woolen Co.'s mills at Carleton Place. Under the terms of sale this could only be done by the purchase of the other mills in the syndicate.

Charles Short has taken a loom fixer's position with the Hamilton Cotton Co.

H. W. Allsop, of Williamstown, Mass., is now boss weaver at the York Cotton Mills, St. John, N.B.

The Perth Flax and Cordage Company, Stratford, Ont., has decided to erect an addition to its factory building, 116 x 42 feet in size, and to increase its capacity four times.

On the 1st June the Supreme Court rendered judgment on the application in the case of the Chambly Manufacturing Company vs. Willett, granting the application, and ordering that three items for damages, aggregating \$5,140, should be referred back to the Superior Court for adjudication, the costs to abide the result.

The Toronto Carpet Manufacturing Co. are starting some of their new looms, and will now have thirty Brussels looms and thirty Smyrna looms. The large five-story extension which has been in progress since last year, but the completion of which has been delayed by the hard winter and the difficulty of procuring labor, will soon be ready to receive its machinery. Eight sets of cards will be installed for spinning carpet yarns.

E. J. H. Pauley, president of the Canada Linen Works, which proposed to establish a mill at Orillia, has been at that town to see what effect the break at the power dam at Ragged Rapids might have on their plans. Mr. Pauley had hoped to have work on the factory, which it was planned to have running in September, begun before this, but he is now waiting to see what action the council will take to repair the damage.

The Avon Hosiery Co., Stratford, Ont., which appeared in the list of new companies last month, state that their new mill will be completed and running by July or August. They are putting up a new three-story mill, 72 by 38 feet, of white brick, located on Erie Street. About 100 hands will be employed on ladies' worsted and cashmere hose, men's socks; also all kinds of cotton hose, infants' toques, etc. Goods will be sold through commission house. They will have dyehouse. Electric power will be used in part, and for heating, drying and dyeing steam will be used. Worsteds, cashmere and cotton yarns will be bought. B. M. Williams will be superintendent.

For the second time within six months the large manufacturing premises occupied by the Allan Paper Box Co. and the Toronto Woolen Machinery Co., Toronto, were damaged by fire, May 24th. The flames were discovered near a small stove in the second flat used by the Box Co., and broke through the ceiling to the third story, also occupied by the box firm. After an hour's fight the fire was extinguished. The Toronto Woolen Machinery Company, which have the first floor, lost about \$1,000 by water and smoke, and the Allan Company's loss was about the same amount. The loss on the building was about \$500.

Elizabeth Leonard was fined \$25, with the option of a month in jail, for violating her contract with the Hamilton Cotton Co., Hamilton. It was shown that \$34 was paid her, and only \$7.33 had been repaid. The girl denied that she had signed her name to the contract produced, but after a sample of her writing was shown the magistrate gave it as his opinion that it was the same. She declared the company refused to carry out its contract, which called for it to pay her \$10. Miss Leonard said she was only offered \$3 a week, and getting a chance to better herself, did so. It was urged on her behalf that the contract having been made in Liverpool, Eng., did not hold good in this country, but the police magistrate said if he upheld the defendant he would be encouraging fraud. Another girl, Mabel Wright, had been summoned on a similar charge, but was too ill to appear.

R. Parker & Co., job dyers, Toronto, are preparing to build a two-story brick addition to their dye works at a cost of \$4,000.

The failure is announced of Hallman & Co., of Shegunindah, Manitoulin Island, who ran a small woolen plant, consisting of custom card and picker.

The Guelph Carpet Mills Company have found their Brussels carpet branch a success, and have recently increased their capacity for this line of goods.

A fire caused by spontaneous combustion broke out one day last month in the boiler room of the Excelsior Woolen Company, Montreal, but the prompt arrival of the brigade prevented much damage from the fire.

The Anchor Carpet Works at Paisley, Ont. are still closed. The former proprietor has been trying to raise money among the townspeople; but the fact of the bank losing something like \$6,000 in the concern makes reorganization under the old auspices difficult.

The heads of departments at the Streetsville Mills now are: Michael Welsh, boss spinner; H. Saunders, boss carder; C. J. Dickson, loom fixer; James H. Hendry, superintendent; T. A. Cardwell, shipper, and Robert Martin, dyer. All were formerly employed in the mills at Carleton Place, and went to Streetsville in consequence of the closing of the mills at the former place.

The Morden Woolen Mills Co., Morden, Manitoba, whose incorporation was noted last month, will manufacture yarns, blankets, tweeds and flannels. They have four looms, one set of cards, 215 spindles, shears, gigs, etc.; also a dyehouse. Steam power is used. Their main mill is 30 by 50 feet, with warehouse 32 by 16, and smaller buildings 16 by 30, 20 by 24 and 12 by 20. They have taken over the Morden Mills as a going concern.

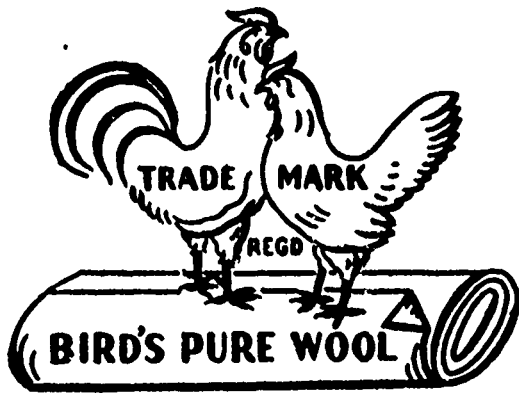
The Paton Manufacturing Co., Sherbrooke, Que., are now employing 560 to 600 hands. They have a knitting department and a worsted yarn plant in addition to their large woolen mill. A short time ago a new head was installed in the knitting plant, the product of which finds a ready market. Wm. McCulloch is general manager of the mills, and since taking charge six years ago the mills have paid their dividends regularly.

A Hamilton paper says there is every probability that within a short time the Eagle Knitting Company will vacate its present premises and build an immense new factory in some other part of the city, or remove to some other locality, where bigger inducements are held out. The present building is too small, and as it is impossible to enlarge the building it will be sold. Several offers have been made for the premises. It is the intention to erect a factory at least twice the size of the present one, which employs over 400 hands.

THE BIRD WOOLEN MILLS.

A representative of the Journal of Fabrics on a recent trip north was struck by the modern character of the equipment of the Bird Woolen Mills in Bracebridge—a town on the borders of Muskoka, which up to a few years ago was spoken of as "Northern" Ontario. There is nothing in the town (except the prominence of lumber piles in the outskirts), and certainly nothing in the Bird Woolen Mills to suggest the backwoods. This mill was purchased in 1875 by H. J. Bird, a native of Yorkshire, who has stuck to the business with British tenacity through good and bad times, and who by striking out into a specialty has made more than a local

reputation. In 1902 the business was incorporated as the Bird Woolen Mills, Limited, the company consisting of himself and members of his own family. In the last three or four years the mill has been almost completely re-equipped with



modern English and Canadian machinery of greater capacity than before, so that while nominally a one-set mill it has a capacity equal to most mills of two sets of cards. Among this new machinery is a set of 60-inch cards, with 72-inch breaker, a twister, having a new stop motion, from Sykes, of Huddersfield; a hydro extractor; a fulling mill from Young Bros., Almonte; a reel from H. W. Karch, of Hespeler, Ont., and other miscellaneous machines, while most of the nine looms—which range in capacity from 86 in. to 108 in.—are new from Hutchison, Hollingworth & Co. A new garnetting machine is also on its way from England. The mill has three water wheels, and there is plenty of power available for more in the water power owned by the company. The hydro extractor is run by a separate water wheel, a "Little Giant" of 12 h.p., and from another wheel a 10 h.p. electric motor is driven for supplying light to the mill and to operate a printing press in an adjoining building.

Mr. Bird's success as a woolen manufacturer is due in large measure to studying the needs of the people and working out a specialty, which would be in regular demand. Having heard of a special kind of cloth made in the Western States for lumbermen, Mr. Bird took up that line and improved upon it. He was the pioneer manufacturer in this make of goods, having started the making of them in 1880 under the name of Mackinaw cloths. These goods are made of an average weight of 34 ounces, double width, and when finished are 56 inches wide. They are made from pure native Canadian wool of the Cotswold, Leicester and Southdown varieties, mixed in certain proportions. Mr. Bird uses all the wool grown in his district of Ontario, and has drawn on provincial sources outside of his own locality, though wool-growing is steadily increasing around Bracebridge. The Mackinaw cloths are fulled and napped in such a way that they become almost rain-proof, and this, together with their remarkable wearing qualities, makes them valued so much by lumbermen, surveyors and others whose life is spent in the woods. Bird's Mackinaws is a term known from Quebec to the Klondike, and hence he has staked his reputation upon this line, and identified himself with the product by a trade mark which naturally suggests the origin of the goods. This trade mark is here reproduced, and the facts are given in order that other mill owners may appreciate the value of having a specialty and of maintaining the intrinsic merits of their goods in order to reap the reward of that merit.

Foreign Textile Centres

Dundee.—Fair business being done in new crop jute at rather easier prices. Reports of growing crop all favorable. Price of yarns almost unchanged. Demand not sufficient to enable spinners to increase prices. Ordinary business dull. Flax inactive; few sales noted. Tows a fraction lower. Flax yarns held for high prices. In linen goods a fair trade being done. Heavy end of linen trade depressed, with few orders.

Huddersfield.—More active demand for cloth for the home trade. Good business in new ranges of patterns in both worsteds and woolens. Lower grade woolens command largest share of attention, especially cheap mixtures. Some call for good worsteds. Very good business being done with Canada, most descriptions of cloth being bought freely. Australian market active, and South African improving. There has also been more freedom in the United States trade. Continental buyers have operated moderately. Wools steady at the London rates.

Leeds.—The chief feature has been the rush in wholesale clothing factories; additional hands have been employed, and work continued longer than usual. This is due partly to rushing goods out before the holidays. Wholesale clothing branch exceptionally quiet. For men's wear most trade has been done in flannel suitings, worsted suitings, and blue serges. In women's wear, tweeds find much favor. Little change in the shipping branch. New business with Australia very small, and little done in the South African market. Matters somewhat brighter with regard to Canada.

Leicester.—Improvement in yarn market decided and prices advanced. Deliveries of choice hosiery fabrics good. Active demand for fancy fabrics and specialties, both for home and export markets.

Manchester.—Cotton prices fluctuating, bulls and bears having innings alternately. Prices on the whole tending downwards. Weather reports from cotton belts generally satisfactory. Yarns quiet, prices irregular, but producers holding pretty firmly. Cloth quiet, with quotations steady.

Rochdale.—London wool sales having closed at rates lately ruling manufacturers will now try for a further advance. Prices at present are most unremunerative, and there is no prospect of any ease. Demand, as usual at this time of year, languid. Although most of the mills are running full time, many of them have not their full complement of machinery working.

Scotland.—**Kirkcaldy.**—Prospects for factories in linen industry for summer months not cheering. American trade poor, the demand continuing on a restricted scale; English trade also disappointing. The high price of raw material is still the trouble in this industry. A good amount of business is being done by linoleum manufacturers, but much more could be undertaken, and any general revival of trade is expected to bring about considerable improvement.

A BREEZE FROM BATHLEY.

Among a party of British manufacturers making a tour through Canada last month was Frederick Akroyd, of Bathley, president of the Chamber of Commerce of that Yorkshire town, where the art of making cheap woolens out of "any old thing" in the way of raw material is supposed to be brought down to a science. Mr. Akroyd gave an interview to a News reporter in the course of which he said the Canadian people must not expect a preferential tariff to be

adopted at once by Great Britain, and that they must learn to understand that the people move slowly, especially in dealing with such a great proposition in which practically every class in the United Kingdom was interested. To-day the whole nation was studying the great problems which confronted the Empire. Mr. Akroyd believed that in the future the British manufacturers would have to look to the colonies for the chief market.

"What about Mr. Chamberlain?" queried the reporter.

"He is as strong to-day as ever, and all classes are closely following his work."

"But do not the recent defeats of the Unionist candidates forecast a defeat of the party friendly to Mr. Chamberlain?"

"Yes, that is always the case in Britain. The Liberals will likely win the next elections, but at the following election the Unionists will come back stronger than ever, when the Chamberlain and other colonial proposals are better understood."

Touching upon the woolen industry and the present trade with Canada, Mr. Akroyd stated that the value of the preference had been felt, and much appreciated in England. He thought that the Canada Woolen Mills, Limited, which recently went into liquidation, had been over-capitalized. It was difficult for Canadian manufacturers to compete with the more experienced manufacturers of England without considerable bolstering up.

"Is the British woolen manufacturer feeling the German competition in England to-day?" asked the reporter.

"Not very much," said Mr. Akroyd. "Four or five years ago we did, but we put our house in order and beat the hoots off of them."

J. W. Fox, another Bathley member of the party, said he believed that Canada would have to raise the duty against British woolens, as he felt that the Canadian industries could not stand the present competition. The British manufacturers had the experience which told in their favor, and the wages and the cost of living were much higher in Canada. Canadian industries were in their infancy, and their machinery was not as advanced as in England, where they were always ready to purchase any new machinery which would lower the cost of production or produce a finer ware. They could beat the manufacturers of the United States in their own market in cotton and woolen goods were they given the chance. One difficulty he noticed in Canada was that the orders for woolen goods were often small and diversified, whereas in the British mills the runs were long, and it was doubtful if they would handle some of the orders which the Canadian woolen mills received. He recognized that Canadian woolen mills could not compete with those of Yorkshire.



Business Notes

A. Klipstein & Co., dye manufacturers, of New Jersey, have been authorized to do business in Ontario, under the Joint Stock Companies Act.

Montreal is to have another departmental store. A partnership has been formed by two men well known in the dry goods trade, E. Lepage and O. Bastien, who will do business under the name and style of E. Lepage & Co.

About \$10,000 damage was done by a fire which broke out on May 31st in the premises occupied by Joseph Lamoureux, mantle manufacturer, Montreal. The stores underneath were occupied by Saxe & Sons, clothiers. They had only occupied the premises three weeks. The adjoining store was rented by

Mr. Nicholson, a Greek, but his shop was not open, though stored with goods in readiness to commence. The losses were divided thus: Lamoureux, \$4,000; Saxe & Sons, \$5,000; Nicholson, \$1,000.

Silverman, Boulter & Co., wholesale hatters and furriers, Montreal, for more than a quarter of a century, have disposed of their hat business to Swift, Copeland & Co. This step was taken owing to the great growth of the fur business.

The Star Mantle Manufacturing Co., incorporated in Canada, has been authorized to increase its capital from \$10,000 to \$25,000. The Merchants Mantle Manufacturing Co., incorporated in Ontario, has been authorized to increase its capital from \$20,000 to \$50,000.

In the case of the Sovereign Mitt, Glove and Robe Co. against the Simcoe Mitt, Glove and Robe Co., referred to last month, Judge Tetzels has given judgment continuing the injunction against the defendants, restraining them from selling, offering for sale, passing off or representing their goods as the goods of the plaintiffs, and from making representations that plaintiffs had gone out of business, or that defendants were plaintiffs' successors in business, and from making any representations calculated to deceive the public or to induce the belief that the business carried on by defendants was the same as the business carried on by plaintiffs.

Among new companies incorporated in the textile trades are the following: The Two Maes, capital \$100,000, Ottawa, to carry on wholesale and retail business as tailors, furriers, ready-made clothes, hatters, gloves and general outfitters, and to acquire the business of The Two Maes Tailoring Co., S. McClenaghan and others; the St. Lawrence Waterproof Clothing Co., capital \$25,000, Montreal, to manufacture ready-made clothing and to do a retail business in cloth and tweeds, G. E. D. LaRiviere and others; Revillon Brothers, a company incorporated in France, capital \$5,404,000, to carry on the fur business, Paul D'Aigneaux, Montreal, representative in Canada; O'Briens, Limited, capital \$60,000, Toronto, to carry on the business of dry goods merchants and gentlemen's and ladies' tailors and dressmakers, Daniel O'Brien and others; the Simcoe Tanning and Fur-dressing Co., capital \$40,000, Simcoe, Albert Shaver and others; the Elliott-Millman Co., capital \$40,000, London, Ont., jobbers in dry goods and men's furnishings, Jas. R. Elliott and others; the Reid Featherbone Manufacturing Co., capital \$20,000, London, Ont., Thos. Reid and others.



Fabric Items

A charge of employing children under fourteen years against the Bachrack Co., dry goods, Toronto, was laid, but subsequently withdrawn, the defence having objected that they had not been served with a written notice before the summons. Magistrate Kingsford considered the point well taken.

A method of converting the refuse from flax straw into fuel after it has passed through the tow machine is announced. The refuse is conveyed automatically to the fuel machine by a blower, where it is mixed with crude oil and an artificial binder, and then packed into solid blocks 8 x 10 inches in size. It is said to be a great heat producer, and has been tested on locomotives with satisfactory results.

Some forty-five of the employees of the Colonial Cloak Co., of Montreal, recently struck. They were employed in the ladies' garment department, and made a demand for higher

wages and improved conditions. The manager, however, states that they went out because an incompetent workman, who had destroyed some goods on which he had been working, was discharged. They demanded that he be taken on again, but the management, while willing to meet the employees with every consideration on a question of wages, reserve the right to treat an incompetent workman as they think fit. According to statements made by the president, the average wages made by the male employee does not exceed ten dollars per week, and a ten-hour day. The women, it is said, receive an average of five dollars per week. The establishment has plenty of stock on hand, and could stand a three months' siege. Three-quarters of the stock for October delivery is made up and ready for shipment.

P. B. MacNamara, the Canadian Government commercial agent in Manchester, in his last report mentions an interesting fact. In consulting with the manager of a large wholesale house in that city he learned to his surprise that they obtained their stock of fleeced-lined underclothing from the United States. "The sample shown me," says Mr. MacNamara, "was inferior in finish and weight to the Canadian article at similar price, and a desire to obtain samples and prices from Canada was expressed. Competition is very keen amongst Canadian manufacturers, and prices have been cut to the wholesale trade, so that but little profit resulted to the mill men. Would it not be well for them to look for an export trade and maintain prices in the home market? In the matter of woolen underclothing the English manufacturer controls the market unassailably."

* * *

PERSONAL.

A. T. Paterson & Co., Montreal, having withdrawn from the wool trade, David Guthrie, manager of the wool department of that firm, has joined the firm of W. T. Benson & Co., wool importers, of Montreal. Mr. Guthrie's many friends among the woolen manufacturers will be glad to know that he remains on deck, and that he has connected himself with a firm so old and reputable in the trade. Mr. Guthrie had been with A. T. Paterson & Co. for thirty-five years, and we may be sure the old ties were severed with regret. The staff of the old firm gave him a handsome present as a testimony of their esteem and an expression of their good-will upon his taking up his new position.

Wm. M. Angus, the well-known woolen manufacturers' agent, died suddenly at his home in Toronto on the 14th May. On the day before he was in the best he felt, but on awaking in the morning he complained to his wife that he felt strange and that his eyes troubled him. While dressing he took a weak spell, and, sinking into a chair, died almost instantly. The cause of death was believed to be apoplexy. He was born at St. Catharines in 1846. His father was employed in the old wholesale house of Donald McInnes & Co., Hamilton, with whom the son also was employed for years, becoming manager of the woolen department. He then went to Montreal, and about twenty-five years ago moved to Toronto. For several years he was Toronto representative of the late firm of James A. Cantlie & Co., and when that firm went out of existence Mr. Angus took over on his own account some of the woolen mills it acted for. He leaves a widow and three children, R. B. Angus, commercial traveller; Mrs. W. R. Pegg and Frederick W. Angus, who was employed with his father, and who will carry on the business without change of name. Mr. Angus was a prominent Mason, and was buried with Masonic honors.

LITERARY NOTES.

The April number of the *Revue Economique Internationale* is a special Anglo-American number, and is largely devoted to textile subjects. An article on the cotton industry by C. W. Macara, president of the Federation of Master Cotton Spinners' Associations of Great Britain, is printed in English. In this article, which gives a clear view of the whole cotton industry of the world, Mr. Macara, after sketching the changes that have taken place in the relations of the British cotton industry to that of the rest of the world, argues for a community of interests among the cotton spinners and manufacturers of all nations. He holds that it is well worth while to attempt an international union of cotton users, "for," says he, "no combination of holders of raw material can long stand against a combination of users of that raw material. In England during the latter part of last year, when cornering on similar lines was being carried on, the Federation of Master Cotton Spinners' Associations determined to run short time, thereby reducing the demand for raw cotton. The result was that prices eventually fell, and fell not for England alone, but for all users of cotton. This federation has always been active in dealing with matters vital to the interests of the cotton trade; but it is neither fair nor reasonable that it alone should be called upon to fight the battles of the trade, and it is not too much to expect that other associations of cotton spinners should fall into line with it now, and by the combined power of an international union put an end to this intolerable state of affairs, which is so seriously interfering with the welfare of one of the world's greatest industries." Cotton mill owners have an absolute community of interest the world over, and, as gambling in cotton has affected not only American but all other growths of the staple, only combined action of all cotton manufacturing interests of the world can deal with the evil. Following on a conference last January between the British Prime Minister and a deputation of cotton mill owners and operatives, the suggestion is made that an international congress be called to discuss legislation in common against gambling in cotton and all other commodities. Then the author urges and outlines a basis which was to be discussed at a preliminary convention at Zurich a few days ago for action in the cotton trade. Mr. Macara's article is worth careful study by Canadian cotton manufacturers. Among other papers in French in this issue are "L'Allemagne et l'Impérialisme," by Dr. A. Weber, of the University of Berlin; "Les Intérêts Français en Egypte," by Jules Cocheris, one of the highest authorities on Egyptian questions. The latter will be followed shortly by a paper from an eminent British authority on Britain's mission of civilization in Egypt. Such articles are indicative of broad views of international relations, and the name of this admirable publication is well borne out in the character of its contents. The publication office is 4 Rue du Parlement, Brussels, Belgium, but it has offices in Paris, London and New York. The last-named agency is at 9 East 16th Street. Each number of this publication contains over 280 pages.

The 1904 edition of the *American Textile Directory*, by the American Directory Co., New York, is out. This makes a volume of 500 pages, and is divided into departments, comprising manufacturers of cotton goods; cordage, duck, hemp and similar goods; knit goods; silk goods; woolen goods; dyers, bleachers and finishers; a directory of raw materials; a dry goods (wholesalers, departmental stores and large retailers); a yarn directory; a textile directory of Canada; of Mexico and Central and South America, and a list of textile associations, etc. The work appears to be very com-

plete, and is substantially bound in cloth. Price, \$5. The publishers have also reprinted separately in paper covers the Canadian section, which is sold at the reasonable price of \$1.

The Canadian Magazine for June contains a very instructive article on automobiles, by T. A. Russell, late secretary of the Canadian Manufacturers' Association. Among other articles of current interest the editor gives a comprehensive review of the causes of the present struggle between Japan and Russia.

"Silk" is the succinct title of a new monthly devoted to the interests of sericulture and silk manufacture in the United States. It is the official organ of the Silk Culture League of America, and is published at Tallulah Lodge, Georgia, at \$1 a year. Though sericulture affords a striking example of the truth of Longfellow's rendering of the proverb, "Art is long and time is fleeting," the editor is as enthusiastic as a botanist who has just found an unknown fern.

Our editorial department is the richer by the advent of a new textile manufacturing paper called The Textile American, published monthly at Boston at \$1 a year. The offices are in Old South Building, and the editor is Henry G. Kittredge. It is a paper of forty pages, 9x12, and the articles cover weaving, spinning, dyeing and finishing, and are well written and well selected.



THE MANUFACTURE OF ASBESTOS.

With all the inventions and improvements in methods and apparatus for fire-fighting, it would seem that the quenching of accidental fires would be a comparatively easy matter; but experience has shown that after a certain critical-burning point has been reached, the best-directed efforts fail. If the extinguishing of fire has not developed into an exact science, the art of building construction has; and it is now possible to make not only buildings absolutely fire-proof, but all their interior furnishings as well. A building of steel, brick, and fireclay offers but little protection from fire to the occupants if its interior is furnished in woods, silks and cottons, and it is these inflammable products that are often placed where ignition is most easily possible. But these materials may be easily substituted by heat-resisting, chemically-prepared fabrics, or what is better, by products of asbestos, a mineral composed of flax-like fibres, which may be woven into cloth, spun into rope, made into paper, or compressed into form that possesses all the qualities of wood except ignition.

Asbestos is one of the most remarkable substances found in nature, and is classified by geologists as a peculiar species of the horriblende family of minerals. Its composition is chiefly silica, magnesia, alumina and ferrous oxide, and consequently unconsumable, hence its name. The fibres formed by the chemical combination above given are perfectly smooth, and in this respect are different from all other known fibres. Paradoxically, it is the link which completes the chain between the vegetable and the mineral kingdoms, and is in fact a mineralogical vegetable possessing the curious properties found in both, for it is at once fibrous and crystalline, elastic and brittle, heavy as a rock in its crude state, yet light as thistledown when treated mechanically. Added to this, its fibres, soft, white and delicate, have by their inherent quality of indestructibility, withstood the action of the elements since the world began, and through all the countless ages, during which the hardest rocks surrounding it have been reduced, this mineralogical mystery has remained intact, having successfully resisted the assaults

of fire, acids and time. Asbestos is found widely distributed throughout the world, although the principal supply of crude asbestos suitable for the manufacture of fireproof cloths and curtains comes from Canada, about seventy-five miles from Quebec. The rock to which the mineral is attached shows on fresh fracture a serpentine mineral of a green shade, containing finely divided particles of chromic and magnetic iron. The asbestos, on cleavage, presents a brilliant, dark-green surface by reflected light, but the fibres, after they are detached, are perfectly white. The act of separating the mineral from its matrix of rock is termed hand cobbling, and after this process the mineral is shipped to various factories in the United States. Asbestos mineral with rock as it comes from the mine costs \$200 per ton, but after it is stripped the long fibres are worth \$1,500 per ton. When these are made into cloth it sells for \$3 per square yard. High grade asbestos plaster is fireproof, soundproof and hangs together with great tenacity when subjected to water. The process of manufacture begins by placing the asbestos mineral in a chaser mill, a machine comprising a rotary edge wheel revolving at the end of a radial arm in a trough, which crushes the mineral, dividing the fibres without destroying them. The result is a snowy mass of mineral wool ready for winnowing, a method of removing the minute particles of rock still clinging to the fibres very much like winnowing of grain; this is done by means of a blast of air, which separates and blows away the foreign matter, leaving the fibres in a refined state and in proper condition for the third stage of manufacture. This is termed air fibre raising, and, as the name implies, the fibres are raised by a current of air produced by a blower of large dimensions through a vertical pipe inclined at a small angle. The object of this procedure will be obvious when it is stated that the air blown across the fibres causes those of coarser texture to be deposited in a compartment near the bottom of the pipe. The medium fibres will be projected a little higher, and these will fall into a second compartment. The finer fibres will be blown to a higher point and there collected, while the dust will be carried to the top and deposited. The fibres are in this way sorted into different lots, according to their texture, and are ready to be made into articles for which they are best adapted. The fluffy stuff now goes to the carding room, just as though it were genuine wool sheared from a sheep or pure cotton fresh from the plant on which it grows, instead of a mineral substance that in its original state was mined like a lump of anthracite coal. A carding machine, similar to that employed in preparing wool, cotton or flax fibres before spinning, has been adopted by the manufacturers. The problem of mechanically combing these fibres was no small one, and the carding takes place in a machine having a large central rotating cylinder covered with card clothing, that is, strips of leather set with projecting wires termed teeth. Around the main cylinder there are a number of smaller cylinders, also provided with card clothing, which engages the teeth of the central cylinder rotating in the reverse direction. This machine straightens out the fibres and lays them parallel; after passing through the first breaker, they are fed into a second carding engine or breaker, which is set to a finer gauge than the preceding. A third and last carding process takes place in a machine called a finisher or condenser, when all the irregularities are eliminated, and the fibres are stripped from the final cylinder by means of a fly comb and are converted into unspun threads, when they are delivered on a traveling apron or endless band and are gathered into rows by reciprocating

scrapers; they are then condensed, and the process is continued in the coming cans. In spinning the yarn, the rovings are delivered to the spindles on a carriage, which then recedes when the fibres are twisted, and returns when the spun asbestos yarn is wound on the spindles. The spinning frames do not draw the yarn, and no strain is placed on it until after it is twisted. This brings the manufacture of the fireproof material to a point where it is to be woven into cloth, packing or other forms, for asbestos is used for divers other purposes than theatre curtains. While adulterated asbestos may be used in some of the mechanical arts, for theatrical hangings its purity should be 100 per cent; it then forms one of the safest barriers against the calamity of fire. As a matter of fact, much of what is termed commercially pure asbestos cloth contains from five to twenty per cent of combustible matter, but absolutely pure cloth may be obtained where price is not a primary consideration.

Asbestos is utilized in the arts in many other forms than cloth; it may be worked into a pulp, and a fireproof paper is obtained. This paper is now used on roofs, between walls, flooring, etc. Fireproof rope, three-eighths inch in diameter, for the suspension of curtains and other uses is made having a tensile strength of 1,650 pounds per foot. Not only is purity essential in asbestos cloth where used for protection against fire, but strength as well; and after asbestos is subjected to a high temperature, it has a tendency to powder, when, owing to its weight, it may break through, and its utility be impaired. One of the leading manufacturers has made an improvement in weaving asbestos cloth for theatre curtains; it consists of two strands of asbestos spun around a strand of high-tempered-melting brass wire, so that the wire is completely embedded and concealed. These asbestos metallic strands form the warp, so that the threads run the long way of the cloth when finished. The weft, or filling-in cross threads, is made of plain, pure asbestos. Such curtains will stand well under a severe high temperature test without breaking. When made into curtains, the sewing is done with asbestos thread.—Scientific American.

WOOL MARKET.

The third series of London wool sales, in progress at the time of our last issue, closed May 19th. When the series opened merinos were practically unchanged, but prices gradually improved, and they closed 5 per cent. higher than the March series. The advance was most pronounced on fine scoureds and greasies. In heavy greasies the improvement was less general. Fine crossbreds ruled five per cent. higher when the series opened. Medium crossbreds, although in demand, were not appreciably dearer. Coarse advanced 5 per cent. at the outset, shabby, cotted parcels being in keen demand. Later the better grades improved, and final rates showed an advance of 7½ per cent. above the March sales. Slipes were 5 to 7½ per cent. dearer. Cape of Good Hope and Natal show whites and fair conditioned greasies improved 2½ to 5 per cent., heavy and wasting greasies were neglected, and difficult to sell at 5 per cent. decline until toward the close when competition strengthened and they closed unchanged. Punta Arenas and Falkland Islands opened unchanged and closed unchanged to five per cent. higher. Americans opened freely and the competition for Cee-long greasies and good, medium and coarse cross-breds was a feature of the sale. During the series 88,000 bales

were taken by the home trade, 74,000 by Continental buyers, 12,000 by Americans, and 9,000 were held over for the fourth series. The arrivals for the fourth series amount to 154,877 bales, including 79,000 forwarded direct to spinners.

In the United States, though the market has been fairly quiet some large transactions have taken place, and an improved demand in spots is shown. Orders for the most part have been of the filling-in character, and it is plain that buyers are not yet ready to begin the spring buying. Some small sales of new wool have been made at prices which are practically the same as these asked for the last fall and spring clip. Although it is a little early yet for the ranges to become firmly established, and the few sales made are hardly a criterion of the actual market level, the indications are that the transition from old to new wools will be unaccompanied by any very great changes in the present market prices.

Montreal wool market is quiet, with upward tendency on mostly all grades, and quotations are not changed. Cape, 17 to 20c.; North West, 16½ to 17½; B. A., pulled merino 36 to 40; Crossbred, fine, 28 to 32, coarse, 19½ to 23c. Stocks here are very low. Manufacturers are buying hand to mouth waiting tariff announcements.

Toronto.—Offerings of new clip wool are a little more liberal, but the rainy weather has kept back the marketing of the clip, and there is a disposition to hold back till the effect of tariff changes is seen. There is a fair demand, and the market is steady for fleece and pulled wools, but the latter are slow. Fleece.—Offerings fair, good demand, and market steady at 17c. for washed, 12½c. for rejections, and 10c. for unwashed. Pulled wools, demand somewhat slow. Market steady at 18½ to 20c. for supers, and 20 to 22c. for extras.

BRITISH WOOL AND TEXTILE MARKETS.

(Correspondence of Canadian Journal of Fabrics.)

Bradford, Eng., May 25, 1904.

During the last month the stiffening tendency has kept up, and a continued creeping up of prices has imperceptibly produced an all-round increase of at least 5 per cent. on April

JUDICIAL SALE OF

Valuable Woollen Mills.

PURSUANT to the order of the High Court of Justice bearing date 26th April, 1904, for the winding up of Canada Woollen Mills, Limited, sealed tenders will be received by the undersigned at his Chambers at Osgoode Hall, Toronto, up to the 28th day of June, 1904, for the mill properties and supplies of the Company.

The following are the properties:—

1. WOOLLEN MILL at Hespeler in the County of Waterloo.
2. WOOLLEN MILL at Waterloo in the County of Waterloo.
3. WOOLLEN MILL at Carleton Place in the County of Lanark, known as the Gillies Mill.
4. WOOLLEN MILL at Carleton Place, known as the Hawthorne Mill.
5. SITE OF WOOLLEN MILL at Lambton in the County of York.

Tenders must be sealed and addressed "J. S. CARTWRIGHT, ESQ., K.C., OSGOODE HALL, TORONTO," and marked "RE CANADA WOOLLEN MILLS, LIMITED—TENDER FOR PROPERTY," and each tender must be accompanied by a certified cheque for \$2000 which will be returned in the event of the tender being rejected.

Tenders may be made for the purchase of all the properties en bloc or for each separate property. Tenders for the supplies and goods in process of manufacture shall be made separately.

Full particulars and permission to inspect the properties may be had from GEORGE DAVIDSON, Liquidator of the said Company, 108 WELLINGTON STREET WEST, TORONTO, or from MESSRS. CASSELS, CASSELS & BROCK, 19 WELLINGTON STREET WEST, TORONTO, his solicitors.

Dated at Toronto this 21st day of May, A.D., 1904.

J. S. CARTWRIGHT, Official Referee.

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.**

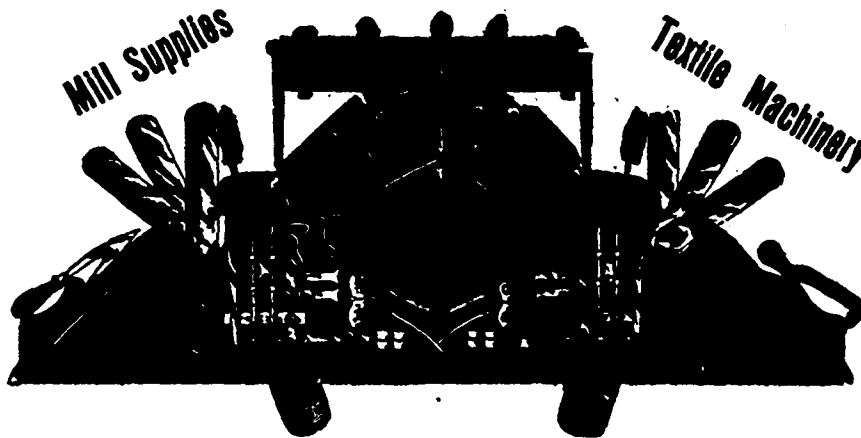
Sole Agents for
Hamilton Cotton Co.'s
Beam Warps, Mule
Ropes and Spindle
Bandings.

Samuel Law & Sons
H. & T. Steel English
Card Clothing.

Francis Willey & Co.
Bradford, Eng.
Wools, Tops, Noils.

English Leather
Belting.

GEORGE REID & COMPANY, WOOL



J. Smith
Woolen Machinery Co.
PHILADELPHIA.
Carding, Spinning,
Pickering Machinery.

Crompton & Knowles
Loom Works.
Looms for weaving
every description of
Fabric.

Prince, Smith & Son
KINGLEY, ENG.
Worsted Spinning
Machinery.

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

TORONTO

Telephone, Main 3591
Night call, North 2561

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

prices, and of even more in the case of the lowest grades. Our market remains, therefore, at time of writing in full sympathy with London, where at the opening of the May sales the prices ruling at the close of last auctions were well maintained on all merinos and fine and medium crossbreds, whilst coarse crossbreds opened out with an advance of full 5 per cent. During the second half of the sales, fines and mediums increased 5 per cent., coarser qualities stiffening to 7½ per cent. advance on last sales' close, and a few parcels even fetching up to 10 per cent. advance. These rises were maintained right up to the close of the sales on the 19th.

Users are becoming gradually more and more reconciled

THE NEW

French Shoddy Picker Machine

SUPERIOR TO ALL OTHERS.

High Test Awarded at Paris Exposition, 1900.

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

Toronto Woollen Machinery Company

118 YUKE STREET, TORONTO.

BREDANNAZ, Manager.

Sole Agents for Canada and the United States.

Prices on Application.

Prices on Application

to the prospect of paying high prices, and are showing at length more tendency to buy. A great number are crying out for material, which dealers show no hurry in supplying.

The effect of the upward tendency on wastes and shoddies is very marked, and all the lower grades are fetching considerably more than they were a month ago. At the recent sales in Bradford, where there were all classes of wools and wastes offered, the prices obtained averaged 1/4d. per lb. dearer than at the preceding sales some three weeks earlier. In shoddies the supply all round is far behind the demand, and manufacturers find their greatest difficulty in getting hold of the material needed to satisfy their customers' wants.

FACTS CONCERNING BELTS.

1. Narrow double belts are more economical than wide single ones. The greater lateral stiffness of the former keeps them in better shape, and local defects are less noticeable.
2. The most economical belt speed is from 4,000 to 4,500 feet per minute.
3. The working tension of a double belt should be from 30 to 35 pounds per inch of width, but the belt may be first tightened to 70 pounds per inch.
4. The best length is from 20 to 25 feet between centres of pulleys.

5. Belts should be cleaned and greased every six months. —Hosiery Trade Journal.

CHEMICALS AND DYESTUFFS.

We have to report a great falling off in orders during last month; enquiries few. Prices remain firm.

Bleaching powder	\$ 1 40 to \$ 1 60
Bicarb. soda	1 75 to 2 00
Sal. soda	0 75 to 0 85
Carbolic acid, 1 lb. bottles	0 35 to 0 40
Caustic soda, 60°	2 00 to 2 25
Caustic soda, 70°	2 25 to 2 50
Chlorate of potash	0 07 to 0 10
Alum	1 35 to 1 50
Copperas	0 65 to 0 75
Sulphur flour	1 40 to 1 60
Sulphur rock	1 45 to 1 80
Sulphate of copper	0 06 to 0 06 1/2
White sugar of lead	0 07 to 0 08
Sumac, Sicily, per ton	45 00 to 50 00
Bich. potash	0 07 to 0 08
Soda ash, 487° to 587°	1 15 to 1 25
Chip logwood	1 50 to 1 75
Castor oil	0 07 to 0 08
Cocoonut oil	0 07 to 0 08

NEW BLACK FOR WOOL



Absolutely Fast ONE DIP Black

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

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

CANADIAN BRANCHES:

1 Colborne Street, TORONTO

13 Lemoine Street, MONTREAL

A. KLIPSTEIN & CO.

122 PEARL STREET, NEW YORK.

HAMILTON, Ont., 24 Catherine Street, N.

MONTREAL, Que., 17 Lemoine Street

Chemicals and Dyestuffs.

CARBIDE BLACK E

Cheapest and Best One Dip Black on the Market

HEADQUARTERS FOR

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

BRANCHES—

BOSTON—87-88 Congress St.
CHICAGO—126 Kinzie St.

PHILADELPHIA—50-52 N. Front St.
PROVIDENCE—13 Mathewson St.

Sole Agents for the Society of Chemical Industry, Basle, Switzerland.

POLLACK BROTHERS & CO., Canadian Sales Dept. for **H. A. METZ & CO., NEW YORK.**

Sole Agents for the products of **FARBWERKE VORM. MEISTER LUCIUS & BRUENING, HOECHST a/ MAIN.**

ANILINES, ALIZARINES, SYNTHETIC INDIGO, Etc.

55 ST. FRANCOIS XAVIER ST., MONTREAL.

GEIGY ANILINE and EXTRACT COMPANY

No. 69 Barclay Street, - New York.

BOSTON. PROVIDENCE. PHILADELPHIA. ATLANTA. CHICAGO. TORONTO.

Aniline Colors, Calico Printers' Specialties. Dyewood and Sumac Extracts. Synthetic Indigo J. R. G.

Canadian Manager: **T. D. WARDLAW, 11 Front St. East, TORONTO.**

SATISFACTION GUARANTEED

—TO USERS OF—

“GENUINE OAK”

TANNED

LEATHER BELTING

Made from **ENGLISH STOCK.**

More Solid Leather to the Foot than any
Other Belt Made.

No Shoulders, Necks or Bellies.

D. K. McLAREN,

Manufacturer and Mill Furnisher

TORONTO

Bay Street

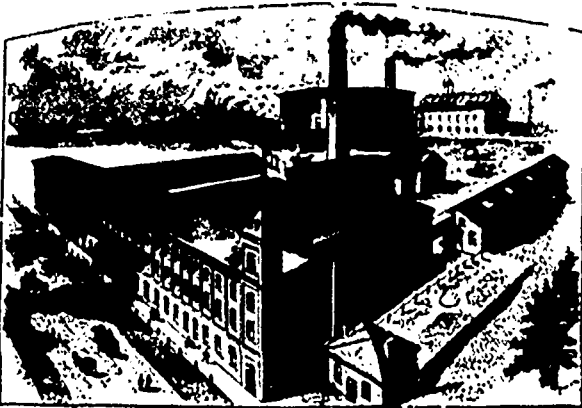
MONTREAL

Craig Street

Hamilton Cotton Co., Hamilton

MANUFACTURERS OF

White and Colored Yarns, Single or Double, Hosiery Yarns of all descriptions, Warps, Twines, white or colored. Webblings & 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.

Canada Bobbin Company,

WALKERTON, Ont.

Successors to
KER & HARCOURT.



Established
1857.

Largest Makers of Bobbins in Canada.

MANUFACTURERS OF ALL KINDS OF

Spools and Bobbins

Used in Woolen, Cotton, Silk, Rope and
Wire Mills, and Small Wood Turnery.

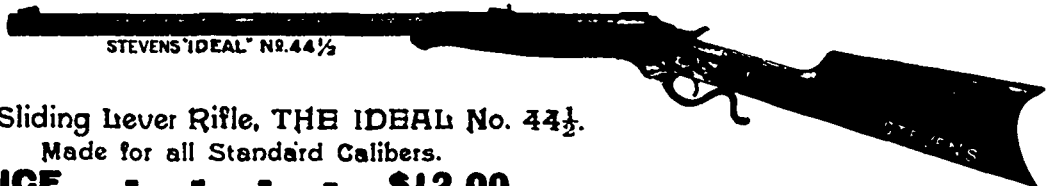
Having lately enlarged and improved our plant, and having a large quantity of well-seasoned stock in the rough always on hand, we are prepared to fill any order carefully and promptly.

Labels

FOR EVERY
PURPOSE
EMBOSSED
PRINTED
ENGRAVED

LEVY & Co., 19 Leader Lane, TORONTO

STEVENS



STEVENS 'IDEAL' NR. 44½

Latest Sliding Lever Rifle, THE IDEAL No. 44½.

Made for all Standard Calibers.

PRICE, - - - - \$12.00.

We Manufacture a Complete Line of RIFLES, PISTOLS, SHOTGUNS.

YOUR JOBBER CAN SUPPLY OUR ARMS.

SEND FOR CATALOG.

J Stevens Arms & Tool Co., 124 Main Street, Chicopee Falls, Mass.

LUCIEN MARGAN'S Successors BRADFORD (England.)

Exporters of Wool Tops, Nolls, Rags, Shoddies, Silk, Mohair, Camel Hair Nolls and all Specialties in Raw Materials required by Cloth, Hosiery, Blanket, Carpet and Felt Manufacturers.

An enquiry will cost you two cents and two minutes time. If you will favor us with the same we shall be glad to send you samples of any raw material which you may require—quoted at lowest prices, delivered at your station, duty and other charges paid.

CABLES—"LUCIEN. BRADFORD."

CODES—A. B. C. 4th and 5th Editions and Private Code.

IRA ICKRINCILL & CO., Ltd., Top Makers and Spinners of all kinds of Worsted Coating, Mohair Camel Alpaca, Fancy Loop, Genappe, Spiral, Hosiery and Carpet Yarns.

KEIGHLEY and BRADFORD.

AGENTS FOR CANADA: LUCIEN MARGAN'S SUCCRS., BRADFORD.

To Manufacturers.

Two first class English overseers from the States, wish to correspond with owner of a woolen mill in regard to starting a new line of Cotton Mixed Blankets, and Low Grade Novelty Goods. For further information address, "Blankets, Care of Canadian Journal of Fabrics, Montreal, Canada. 5-2

—Raw cotton maintained a surprisingly strong position during May. It opened at \$13.85, with every prospect of a drop, but closed at \$13.05. This is above the basis of piece goods. The future will depend on the weather in the cotton belt. It will likely be three months before prices are any easier for piece goods.

EVAN ARTHUR LEICH

232 Summer Street, 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.
Platt's Special Machinery for making English & 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. Sykes's Card Clothing for Cotton. Critchley's Card Clothing for Woolen and Worsted. Varey's Fallers. Harding's Pins and Circles. Dronsfield's Grinders and Emery Fillet. Comber Aprons, Condenser Aprons, etc.

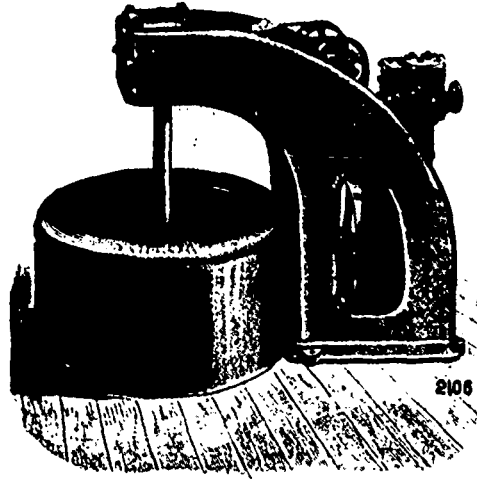
Textile Machinery Association, Limited,
Flax, Hemp and Jute Machinery.

George Hodgson, Limited,
Bradford, Looms for Worsteds, etc.

The Automatic Feeding Machine Company,
Feeders for Fibres of all classes.

HYDRO-EXTRACTORS

FOR
WOOL, COTTON, WORSTED
AND ALL OTHER
TEXTILE TRADES

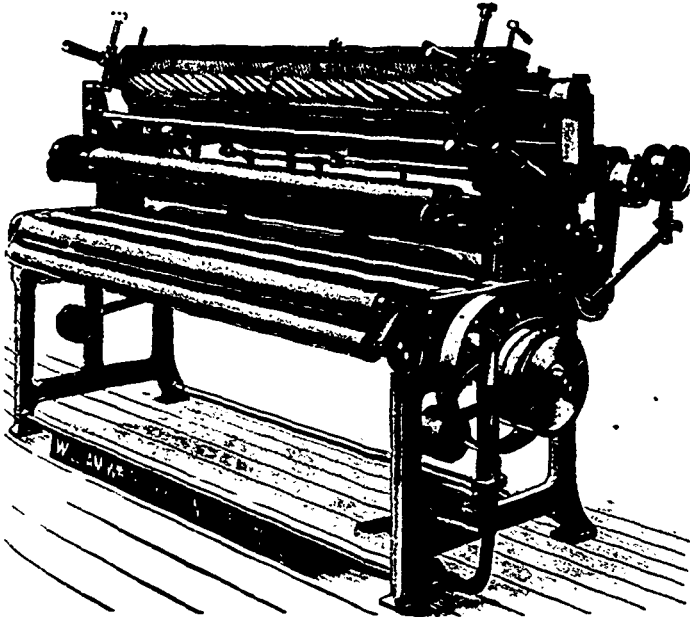


48 in. Engine Driven Suspended Hydro Extractor.

WATSON, LAIDLAW & CO.
DUNDAS STREET. GLASGOW. SCOTLAND.

SEND FOR OUR 1904 CATALOGUE.

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.

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 of every description for Cotton, Woolen and Worsted.

SOLE AGENTS FOR

JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk.

GEO. HATTERSLEY & SONS, Ltd., Makers of every description of Looms, &c.

JAMES MACKIE & SONS, Ltd., Makers of Flax, Tow, Hemp and Jute Preparing and Spinning Machinery.

GEO. ORME & CO.'S Patent Hank Indicators, &c.

JAMES YATES & SON, Hardened and Tempered Steel Card Clothing for Woolen and Worsted Cards.

LOCKETT, CROSSLAND & CO., Engravers and Builders of Leather Embossing Machinery, &c.

R. CENTNER FILS, Heddles.

GOODBRAND & CO., Yarn Testing Machinery, Wrap Reels, &c.

JOSHUA KERSHAW & SON, Roller Skins, &c.

GEORGE SMITH, Doffer Combs, &c.

BRADFORD STEEL PIN CO., Comber Pins. [&c.

CLAPHAM, SMITH & CO., Caps, Tubes and Spindles for Worsted.

ALSO AGENTS FOR

JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.

WILLIAM TATHAM & CO. Waste Machinery.

DRONSFIELD BROS., Limited, Emery Wheel Grinders, Emery Fillet and Flat Grinding Machines.

COTTON CORD & VELVET CUTTING MACHINE CO.

Corduroy Cutting Machines, &c.

Pick Glasses, Leather Aprons, Patent Wire Chain Aprons.

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
Post-paid

Address **BIGGAR-SAMUEL, Limited,**
Fraser Bldg., MONTREAL, Can.

ESTABLISHED 1859

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

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

"WE HOLD THEE SAFE."

The Dominion Guarantee Co.

LIMITED.

Head Office, Montreal, Can.

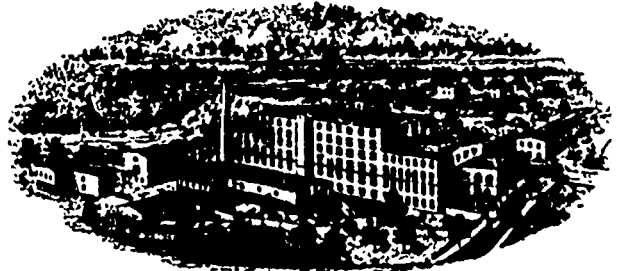
CAPITAL, \$200,000.

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

CHAS. W. HAGAR, General Manager

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 Parthenais
Sts., MONTREAL, QUE.

SMITH WOOLSTOCK CO.

Manufacturers of Wool Stock and
Shoddies of every description.

Dyeing and matching of colors for the Woolen
Mill trade a specialty.

Office and Works:

219 FRONT STREET EAST, TORONTO

RAILWAY ENGINEERING.

By CECIL B. SMITH, MA. E.

A concise Treatise on Railway Construc-
tion, etc., for Engineers and Students.

Cloth. 200 Pages.

Profusely Illustrated, - \$1.50.

Biggar-Samuel, Limited, Publishers
Toronto and Montreal.

You are interested in the Metric System

Of Weights and Measures,
because it will soon be adopted
in Canada.

CHART 10 cts. PER COPY.

BIGGAR-SAMUEL LIMITED,
18 Court Street, TORONTO

TO WOOLEN MANUFACTURERS.

MESSRS. REICHE & CO.

Wool, Tops, Nolls, Yarns, etc.

BRADFORD, ENGLAND.

Represented in Canada by **JAMES A. CANTLIE,**

22 St. John Street, Montreal.

Samples and Lowest Quotations promptly supplied.
Correspondence solicited.

THE MONTREAL BLANKET CO.

Manufacturers of

Shoddies, Wool Extracts
and Upholstering Flocks

Office and Works: COTE ST. PAUL
P.O. Address: MONTREAL

If You WISH to learn something
about the Metric System of
Weights and Measures, write for a copy of
the Metric Chart, 40 x 14 inches, mailed on
receipt of ten cents in stamps or coin.

Address **BIGGAR-SAMUEL, Limited,**
Toronto or Montreal.

AGENTS WANTED.

Local agents wanted to take subscriptions
for an Engineering Publication. For terms
apply, Box B,

Office of Canadian Engineer,
18 Court Street,
Toronto, Ont.

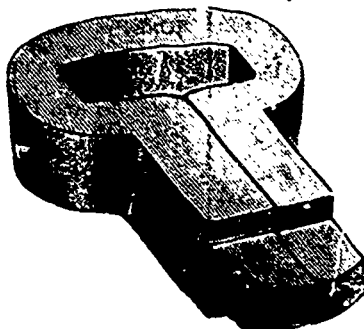
WILLIAM CRABB & CO.

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, Specia
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. Row Picker
with solid interlocking feet. Pat. Feb. 26, 1889.

E. T. CARTER

Successor to JOHN HALLAM

WOOL
35 years at the old stand:
85 & 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.

The R. Forbes Co.

(Limited)

Manufacturers of

WOOLEN AND WORSTED YARNS

For Hosiery and other work

HESPELER, ONT.

INDEX TO ADVERTISEMENTS

Atteaux & Co., F. E.....	4
Barlow, John W.	8
Bellhouse, Dillon & Co.....	1
Benson & Co., W. T.....	1
Bischoff & Co., C.....	2
Brown, John E.....	9
Canada Bobbin Co.....	6
Cantlie, James A.....	8
Carter, E. T.....	9
Cassella Color Co.....	1
Crabb & Co., William.....	8
Crowe W. M.....	2
Dominion Dyewood & Chemical Co....	1
" Guarantee Co.....	8
" Oil Cloth Co.....	8
Dronfield Bros.....	11
Eickhoff, A.	9
Felten & Guillaume.....	12
Firth Co., William.....	7
Forbes Co., The R.....	9
Fraser, Robt. S.	2, 11
Garland Mfg. Co.....	2
Geigy Aniline & Extract Co.....	4
Gessner, David	11
Halton's Sons, Thomas	2
Hamilton Cotton Co.....	6
Jack & Co., Watson	1
Klipstein & Co., A.	4
Lachute Shuttle Co.....	9
Lawson, Combe Barbour Ltd., Fairbairn	12
Leigh, Evan Arthur	7
Leitch, A. W.....	1
Levy & Co.....	6
Linotype Co.....	10
Long & Bisby.....	9
Marcan's Successors, Lucien.....	6
Mather & Platt	7
McArthur, Cornelle & Co.....	1
McLaren, D. K.....	5
" Belting Co., J. C.....	13
Mississippi Iron Works	9
Montreal Blanket Co.....	8
Morton, Phillips & Co.....	9
New York & Boston Dyewood Co.....	1

Pollack Bros. & C.....	4
Reiche & Co.	8
Reid & Co., George	3
Riley & Co., C. E.....	3
Roessler & Hasslacher Chemical Co....	2
Rosamond Woolen Co.....	8
Sheldon & Sheldon.....	2
Smith Woolstock Co.....	8
Stevens Arms & Tool Co.....	6
Stoddard, Haserick, Richards & Co.....	10
Thompson & Co.....	3
Toronto Woolen Machinery Co.....	3
Turnbull Co., The C.....	8
Watson, Laidlaw & Co	7
Watson Mfg. Co., L. S.....	12
Whiteley & Sons, Limited, William.....	7
Wilson Bros.	9
" " Bobbin Co.....	11
" Paterson & Co.....	1
Young Bros.....	9

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 always on hand and warranted. All kinds of Cutlery ground and repaired.

No. 381 BROOME STREET,

Between Broadway and Bowery.

NEW YORK CITY

**Matte's, Hughes' and
Robinsonian
Interest Tables**

**Buchan's, Oates' and
Robinsonian
Sterling Exchange Tables**

**Tables in French and
German Exchange.**

Send for Catalogue.

MORTON, PHILLIPS & CO.

Stationers, Blank Book Makers
and Printers

1755-1757 Notre Dame St., Montreal

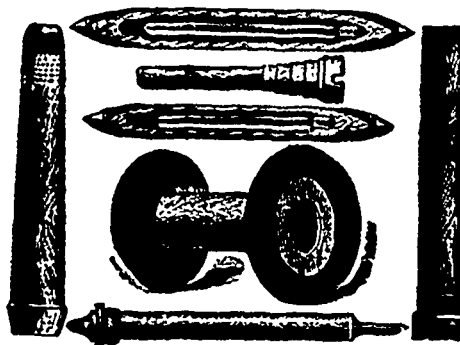
WILSON BROS.

Wool Importers

38 Front Street East, - Toronto.

H. 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.

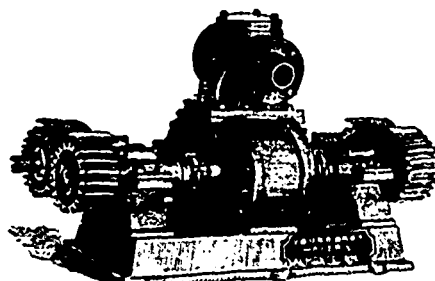
Orders solicited and all work guar-
anteed to give satisfaction.

E. F. AYERS, Manager
LACHUTE, P.Q.

MISSISSIPPI IRON WORKS



ESTABLISHED
1875.



Manufacturers of English or American Pulling Mills and Washers, Wool Pickers,
Exhaust Fan Drives, Dusters, Rotary Force Pumps for Fire Duty, Hotter Feed
Pumps, Shafting, Hangers, Castings, Pulleys, Gearing, Forgings.
Equipment of MILLS of every kind.
YOUNG BROS., Almonte, Ont.

STODDARD

**IMPORTERS OF COTTON, SILK,
WORSTED, WOOLEN AND FIBRE
MACHINERY, MILL SUPPLIES,
EGYPTIAN COTTON AND BURLAPS**

Sole American Representatives for

DOBSON & BARLOW, LTD.

New Hopper Bale Breakers, Pickers, Cards, Combers, Fly Frames, Mules, Gassers, etc. Improved Worsted Carding Engines.

PRINCE, SMITH & SON

Gill Boxes, Noble Combs, Drawing, Roving, Spinning, Twisting and Reeling Machinery for Worsted.

HASERICK

**SOCIETE ALSACIENNE de CONSTRUCTIONS
MECANIQUES de MULHOUSE**

Alsatian Cotton Combers, Slashers for Fine Warps, French Worsted Machinery.

SAMUEL LAW & SONS, LTD.

Card Clothing of Every Description.

WM. WHITELY & SONS

Mules, Tentering Machines, Warpers, Mercerizing Machinery, etc.

E. HOYLE & SONS, LTD.

Dyeing and Finishing Machinery, Hydraulic Presses.

HARDING, RICHARDSON, RHODES & CO., LTD.

Gill and Combing Pins, Needles.

SAMUEL ROWBOTTOM

Spindle Bands and Tapes.

RICHARDS

JOHN DIXON & SONS

Mill Bobbins.

J. PARKINSON

Loom Temples.

J. KAYE & SONS, LTD.

Patent Oil Cans.

MILL SUPPLIES German Tempered Steel Wire Heddles, Persian Roller Skins, Doup Twine, Leather, etc.

& CO.

152-8 Congress St.,
8 Currer St.

OFFICES:

Bourse Bldg.,
East Fourth St.,

Boston
Bradford, Eng.

Philadelphia
Charlotte, N.C.

BALBRIGGAN SHIRTS.

A German trade paper remarks that the demand in India for undershirts made from Egyptian cotton is on the increase, a correspondent of the paper stating that 25,000 to 30,000 cases of Balbriggan shirts, etc., are being shipped yearly to Bombay, Colombo, Calcutta, Rangoon, Singapore, etc., and he complains of the low prices obtained, although it ought to be a good and paying business. The reason he gives for the cut prices is that many manufacturers, particularly those in the south of Germany and Holland, make goods for consignment. The dealers use the stocks over there to press down the prices all round, most of the orders come from Hamburg shipping houses, and it is ridiculous the low limits they give sometimes, merely because they have bought a stock lot at a low price on the other side. The correspondent goes on to say, that there is no need for either cut prices or goods being made for consignment, these fine goods being mostly made in Germany, and orders would come just the same to that country, if such practices were stopped, which could easily be arranged by a convention. How does a manufacturer know how he stands, if half of his stock is on the other side, what good is it swamping even places like Val paraiso, Lima, Lorenzo-Marques, Manila, etc., with knit underwear, it spoils business and it would be far better to try to get a profit, than give a Parsee or Chinaman a chance to fill his pockets.

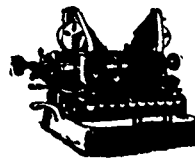
—Canadian knitted goods are taking well in Australia, and there is every prospect of a large and profitable trade if our manufacturers cultivate it properly.

REASONS WHY

The Canadian Oliver Typewriter

IS SUPERIOR TO

ALL OTHERS



VISIBLE WRITING.—The writing is visible, each letter being in plain sight the instant it is made.

DOUBLE TYPE-BAR.—It has a double or U shaped Type-Bar provided with a shaft bearing as broad as the bar is long, thus insuring Permanent Alignment without guides.

SPEED.—Its visible writing, rapid escapement, direct type-bar connection, downward stroke, and light touch, make it the most speedy of all writing machines.

TYPE, FACE UPWARD FOR CLEANING.—The type are of steel and lie face upward so that they can be cleaned with one sweep of the ordinary type brush.

PRICE.—\$30.00 cheaper than imported machines of like standard; because MADE IN CANADA.

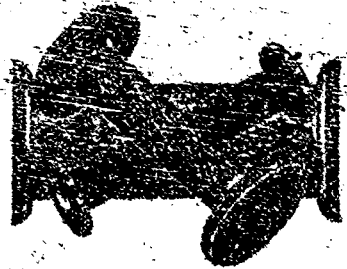
Why Pay Duty?

LINOTYPE COMPANY, . . . MONTREAL
MANUFACTURERS

Branch: 55 VICTORIA STREET,
TORONTO.

BOBBINS & SHUTTLES

EST. 1828



“Mazet, Liverpool”
A.H.C. & Co. Ltd. Used

47 GOLD MEDALS AND DIPLOMAS.
SEE EXHIBIT—ST. LOUIS.

Wilson Bros. Bobbin Co. Ltd.
Cornholme
Works: Garston, Liverpool.

The best results in
Card Grinding
are obtained by using



DRONSFIELD'S PATENT
GROOVED EMERY FILLETING
SPECIALITIES: MACHINES FOR GRINDING CARDS
MACHINES FOR COVERING ROLLERS WITH LEATHER

DRONSFIELD BROS. LTD.
ATLAS WORKS, OLDHAM, ENGLAND.

SIXTY 6'

TEXTILE MACHINERY (New and Second Hand)



English Sales Attended.

CARD CLOTHING

TETLOW'S
Stock in Canada

Condenser Aprons

Buffed Surfaces
Plain & Grooves

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

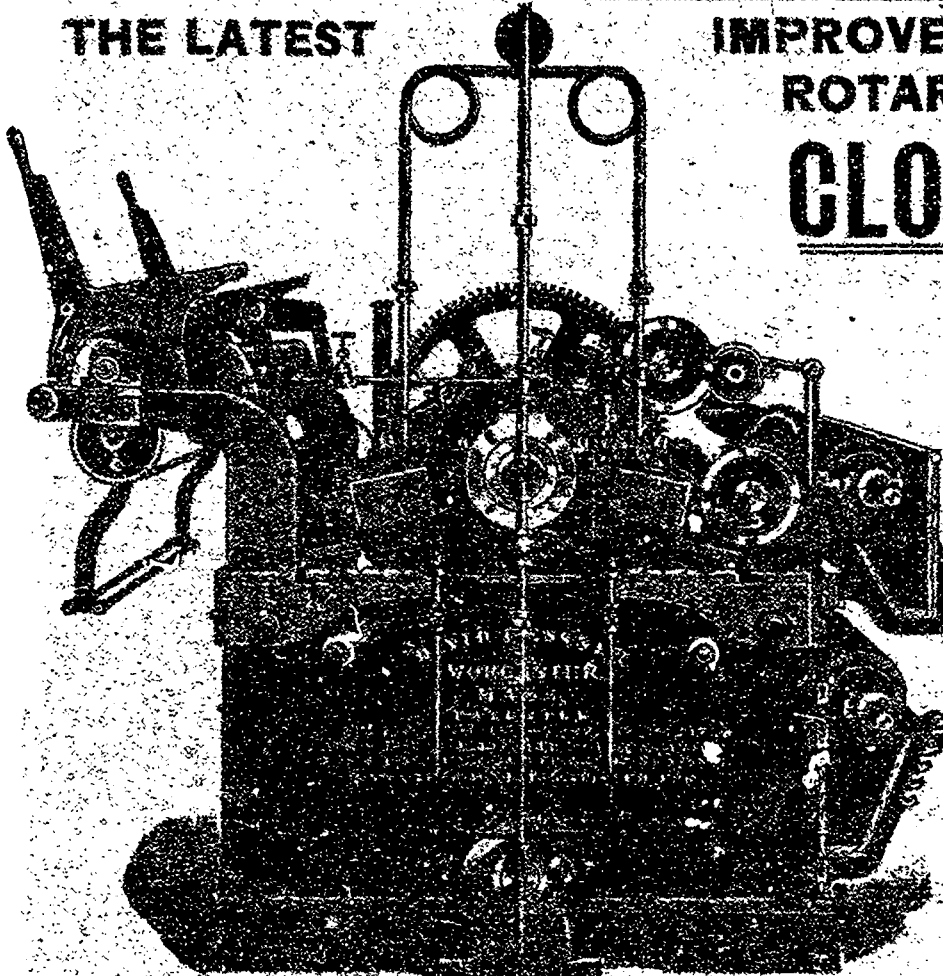
ROBT. S. FRASER

17 LA MOINE ST., MONTREAL

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.

What Makes the Wheels Go ?

OUR "EXTRA"

Factory
MONTREAL

{ THE J. C. McLAREN BELTING CO, }

TORONTO
VANCOUVER

Fairbairn-Lawson-Combe-Barbour, Ltd.

LAWSON BRANCH: HOPE FOUNDRY, LEEDS, ENGLAND

Makers of Machinery for

Preparing and Spinning Flax, Hemp, Tow and Jute

AND OF **Special Machinery for the Manufacture of Twines,**

—ALSO OF—

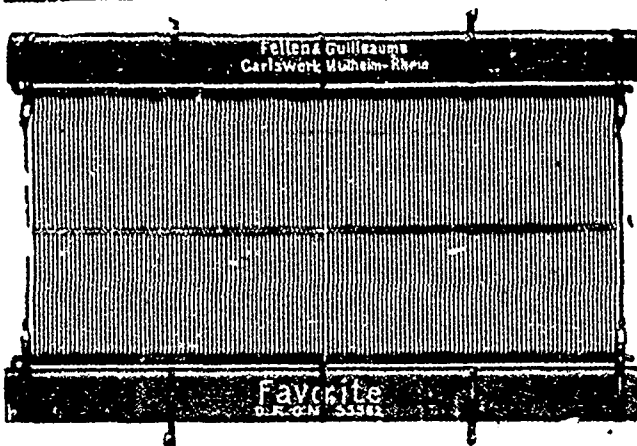
GOOD'S COMBINED HACKLING AND SPREADING MACHINE,

Long Reach Screw-Gill Drawing Frames, — Chain-Gill Drawing Frames with Apron Head,
PATENT HIGH-SPEED HORIZONTAL AND AUTOMATIC SPINNING FRAMES FOR MANILLA,
AND OTHER

SPECIAL MACHINERY FOR THE MANUFACTURE OF ROPE YARNS AND BINDER TWINE.

Improved Laying Machines. Haskell-Dawes Tubing Twisters
Brownell's Patent Twisting and Laying Machines for Twine.

—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.—



Fellen & Guillaume, Carlswerk
Aktion-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, surpassed by any other Wire Heddles in the market.

Patent "Favorite" Shafts for Weaving

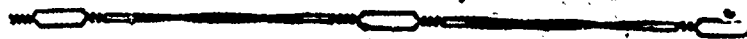
give, combined with above Heddles, the best, most Reliable and most Durable Heddles, either made with one or two carrying wires inside the wooden frame. These shafts have already been adopted by a great number of weavers, who speak most favorably of them, as can be seen from many testimonials in the 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, Fancy Cotton, etc., etc. Superior Harness Frames furnished promptly. Also Hand Cards of every description.

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