

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.
- Additional comments:/
Commentaires supplémentaires:

- 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

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. XV. TORONTO AND MONTREAL, APRIL, 1898. No. 4.

The United Alkali Company, Limited, of England.



Caustic Soda, 60°, 70°, 74°, 76°, 77° Soda Ash, all strengths, SAL. SODA. PURE ALKALI, 58°.

WILSON, PATERSON & CO., Montreal, Sole Agents. Importers of Sulphate of Alumina, Hypo Sulphite of Soda, Bichromate of Soda, Silicate of Soda, Caustic Potash, Crystal Carbonate, Borax, Coconut Oil, Palm Oil, Castor Oil, Cotton Seed Oil, Rosin Oil, ROSIN. All Chemicals used by Soap, Paper, Woolen, and Cotton Manufacturers.

NEW YORK OFFICE, - 133, 135, 137 FRONT STREET

McARTHUR, CORNEILLE & CO. Importers and Manufacturers of

OILS
CHEMICALS
 and **DYE**
STUFFS

310 to 316 St. Paul St.
 MONTREAL

DOMINION DYEWOOD & CHEMICAL Co. TORONTO
 MANUFACTURERS

ANILINES - ALIZARINES
 DYEWOODS, CHEMICALS, ACIDS, ETC.
MARSHALL'S INDIGOS AND ARCHILS
 SOLE AGENTS IN CANADA FOR
 CARL NEUMANN - Alizarines, Acetates, etc.
 ANILINE DYE WORKS, (FORMERLY A. GERBER & CO) - Direct Cotton Colors.
 CHEMISCHE FABRIKEN VORN WEILER-TER MEER - Aniline Colors and Chemical Products.
 JOHN MARSHALL, SON & CO. - Indigos, Archils, Extract Fustic and Logwood.
 SCOTTISH ALUM CO. - Alum, Sulphate, Alumina, etc.
 FRANCESCO, BASSO & CO. - Sumac.

JACK & ROBERTSON 7 St. Helen St.
 MONTREAL

New York and Boston Dyewood Co. Manufacturers of ...

DYEWOOD EXTRACTS

Sole Agents for the United States and Canada for the

ACTIEN-GESELLSCHAFT FUR ANILIN-FABRIKATION
 Manufacturers of ANILINE COLORS,
 Berlin, Germany.

NEW YORK: 55 Beekman St. BOSTON: 115 & 117 High St.
 PHILADELPHIA: 129 & 124 Arch St.
 A. W. LEITCH, 16 Hughson Street South, HAMILTON, Ont.

ANILINE DYES LOGWOOD SUMAC INDIGO } Extracts

HEMOLIN BLACK, MORIN YELLOW

WM. J. MATHESON & CO., Limited
 423-425 St. Paul Street, MONTREAL

Main Office: 178 Front Street, New York.
 Branches: Boston, Philadelphia, Providence.
 Works: Long Island City, Port of New York

W. T. BENSON & CO.
 31 Common St., MONTREAL

Direct Importers of **FOREIGN WOOL**

And all lines of **CHEMICALS and DYESTUFFS**
 Also COCOANUT AND PALM OIL, and all other Soap Stocks.

Sole Agents for Messrs. JOHN DAWSON & CO., of GLASGOW
 Manufacturers of

Extracts of LOGWOOD, FUSTIO, SUMAC, etc.
 Complete stocks of all the above always on hand.

Bellhouse, Dillon & Co.
 SOLE AGENTS IN CANADA FOR
 THE WEST INDIES CHEMICAL WORKS, LIMITED,
 Spanish Town, Jamaica, W. I.



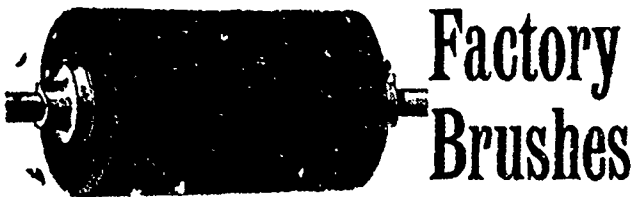
TRADE MARK
PURE EXTRACTS LOGWOOD
 ALLIGATOR BRAND
 Write for samples and prices. FOR COTTON, WOOL AND SILK
 Toronto Office - 26 Colborne Street.
 30 St. Francois Xavier St., Montreal
 New York Office, 20 Cedar Street.

GEO. D. ROSS & CO.

WOOLEN COMMISSION MERCHANTS
MONTREAL and TORONTO

Tweeds Stoffes Shirts and Pants
Worstedes Blankets Fulled Socks and Mitts
Serges Yarns Gloves, Hosiery, etc., etc.

Advances Made on Consignments.
Correspondence Solicited.



Factory Brushes

AND ALL KINDS OF
MACHINE BRUSHES made, and Blocks re-filled.
Highest quality and best work-
manship guaranteed, and clos-
est possible prices.
CHAS. BOEKH & SONS, Manufacturers, TORONTO

DYEWOOD EXTRACTS

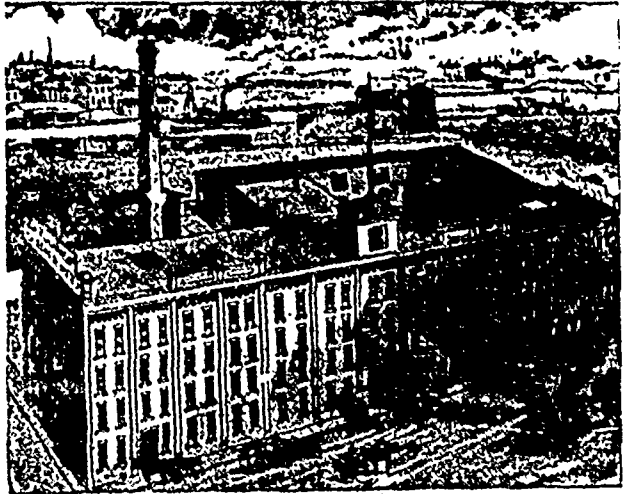
Manufactured by
MUCKLOW & CO., - BURY, ENGLAND

DOMINION DYEWOOD & CHEMICAL CO.
TORONTO

SOLE AGENTS FOR CANADA

A. R. CLARKE F. O. CLARKE C. E. CLARKE

A. R. CLARKE & CO.



Manufacturers of **GLOVES and MITTS**
Office: 28 Front St. East TORONTO
Works: 199 to 209 Eastern Ave.
Branches at Montreal, Quebec, Halifax, Winnipeg and Victoria

PURE SOAP

FOR
Woolen Mills, Knitting Mills, Carpet Factories,
Shirt Factories, Laundries.

WANZER SOAP CO., HAMILTON



Samples and Price List on Appli-
cation. We have no Travellers, and
Sell to the Wholesale Trade only.

The Beaver Rubber Clothing Co.

THE PIONEERS IN THIS TRADE IN CANADA.
8 St. Lawrence Street, MONTREAL.
E. L. ROSENTHAL, Manager.

Felts for Pulp Mills

Felts will last longer and make dryer Pulp. All up-to-date mills use our Felts. New mills, when in need, write for samples and prices.

Twenty years in the business—the first to make Felts in Canada; capacity 1,000 lbs. per day. All our Felts are woven endless, without a splice. Our

HAMELIN & AYERS, Lachute Mills, P.Q.

WILSON & COMPANY

DEALERS
IN ALL KINDS OF

WOOL

CORNER FRONT AND CHURCH STREETS,
TORONTO, ONT.

Established 1848.

A. EICKHOFF

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 Bowerly.

NEW YORK CITY

THE CANADIAN JOURNAL OF Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XV.

TORONTO AND MONTREAL, APRIL, 1898.

No. 4.

Canadian Journal of Fabrics

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

Subscription. Canada and United States, \$1.00 per year. Great Britain 6s. Advertising rates on application.

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

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

Agency in Europe. Polsue Bros., 30 Poppin's Court, Fleet St., London, Eng
Toronto Telephone, 1392 | Montreal Telephone, 2589

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

THE CANADIAN TEXTILE DIRECTORY

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

Price, on and after publication, \$3.00. Subscribers ordering in advance are given a discount of \$1.00

BIGGAR, SAMUEL & CO., Publishers,
Fraser Building, Montreal.

CONTENTS OF THIS NUMBER:

	PAGE		PAGE
Burling, Mending, etc.....	107	Mending, Burling, etc.....	107
Calicoes, England's Printed	119	Mills, Among the.....	107
Chemicals and Dyestuffs	120	Shoddy, Labelled.....	98
Cotton Trade, English.....	99	Textile Centres, Foreign.....	113
Designing	110	" Desika.....	112
Figured Dress Goods.....	107	" Factories and Dyehouses,	
Dyeing	101	Drying Wool, etc., Ventilation of	99
" Cop.....	106	Textile Imports from Great Britain	112
Dyes in Dyeing (Cotton Wool)		" Spinning Fibers.....	109
Fabrics Diamine.....	111	Ventilation of Textile Factories and	
Dyestuffs, Artificial.....	108	Dyehouses, Drying Wool, etc.....	99
Editorial.....	97	Wool Duties, The United States.....	97
Fabric Items.....	119	" Faults in.....	104
Imports from Great Britain, Metal.....	112	" Market, The.....	119
Knit Goods trust in the U.S., &.....	99	" Sales, The London.....	98
Literary Notes.....	112	" Scouring.....	106

Editorial.

The following paragraph from a contemporary contains so much wisdom and is so applicable to present conditions that we reproduce it in full:—"There are too many manufacturers who are ambitious to own and operate large plants. There are too many manufacturers who are actually mill poor, who are handicapped for capital to operate their mills. It is not good business for any manufacturer to throw all of his profits back into the mill, thereby increasing his mill property at the expense of his capital account. The desire to own a large mill is com-

mendable only when every condition justifies it; it is not commendable to overstep the lines of common prudence, and this is done when the manufacturer ties his money up in buildings and is forced to lean on others for the necessary operating expenses, or even for the expenses of distributing his goods. The manufacturer who has quick capital enough to operate his plant independent of outside aid has a decided advantage in every way over the manufacturer whose plant represents about all he has. A moderate sized plant, well-balanced from the carding room to the finishing room, with ample active capital behind it, will do better in bad times as well as good times than a plant that is restricted by insufficient capital. These thoughts are timely, for there is a tendency among manufacturers to extend their plants. Put your equipments in first-class order, but go slowly in making extensions.

THE UNITED STATES WOOL DUTIES.

It is still a much-debated matter what effect the present United States tariff will have on the wool market. The bill became law after the clip of 1897 had been marketed, and until the growth of 1898 is in the market the problem must remain unsolved. Under unusual circumstances a large increase of duty stimulates production, and induces smuggling. Great quantities of wool were rushed into the United States before the imposition of the duties, but much of that free wool has been already worked up into textiles; probably 300,000,000 lbs. of the wool in the country at the passing of the new tariff have so passed into consumption, and we need not consider the free wool a factor in the market. The demand is not only increased by the duty, but by an increased power of consumption, for it is estimated that the falling off in imports of textiles since the passing of the Dingley Act represents 85,000,000 lbs. of wool, and that the increase in both population and purchasing power of the American people since 1892 will require at least an additional 40,000,000 lbs. per annum more than was adequate at that time. In spite of these facts the wool clip of the United States has steadily diminished, and last year was 13,000,000 lbs. less than in 1896, and the smallest yield since 1879. With the free wool pretty well cleared from the market, and the consumptive power largely increased, there should be a good market for our wools in spite of the duty.

We must not overlook the use of wool substitutes which will spring up to meet the increasing demand. We

mention in another place that the United States manufacturers are now turning out apparently pure worsteds which are largely cotton, and this is only an indication of what is going on in all lines. As domestic wool is not produced in anything like sufficient quantities for clothing purposes, there has necessarily been a large increase in the use of shoddy. Since the needed supplies of pure wool cannot be obtained, manufacturers must employ rags, cotton and other substitutes for wool. Such was the effect of the high duties on wool in the tariff which preceded the McKinley Act, as was shown by the census returns in 1890. In 1890 the use of cheap substitutes for wool was almost if not quite as great as was the use of pure wool in making United States stuffs for clothing, and the use of these substitutes was necessarily stimulated by the heavy increase in the duties on wool and woolens in the McKinley tariff. Under the Dingley Act a new era of shoddy has begun. Smuggling must also be considered a factor in the Canadian wool market, for not only are considerable quantities of our wools likely to be smuggled into the United States in future, as has been found not unprofitable in the past, but the demand for textiles in Canada for purposes of smuggling will be great and will tend to lend tone to the market.

It is not then to be assumed that because the United States tariff is high the prices of Canadian wools are to be low.

LABELLED "SHODDY."

A bill has been under discussion in the Ohio legislature "to prevent fraud in the sale of woollen, shoddy and cotton goods." The measure provides that any person or persons who manufactures, sells, offers for sale or exchange any yarn, knit, woven or felted fabric, or article designed for clothing to wear, and made in part or whole of wool, cotton or shoddy, shall cause the same to be tagged, labeled or stamped with statement of the per cent. of each material entering such article or fabric. This statement shall be written, printed or stenciled in the English language, and shall be the most conspicuous wording borne by the article or fabric. The terms wool and cotton shall be construed to mean new fibers, such as have not before been used; the term shoddy shall be construed to mean any of the materials known commercially as shoddy, noils, flocks, mungo and wastes. In the case of ready-made clothing, the proper labeling of the fabric or fabrics, of which the body of the garment or article is made, shall be considered compliance with this act. A variation not to exceed 15 per cent. from the composition given shall not be considered a violation of the provisions of this act. A violation of the law is punishable by fine and imprisonment.

The only defect in such legislation is that it can hardly be enforced. The good old legal maxim "let the buyer beware" still rules trade. One has to be an expert in order to determine whether he is being honestly dealt with. However, if anything can be accomplished by law to protect the people against misrepresentation (explicit or implied) in the matter of wool fabrics, the task should not be delayed.

In this connection it is interesting to note that the manufacturers of the United States are becoming expert producers of imitations, as is shown by the following extract from the Leeds, Eng., correspondence of a Boston paper: "A few days ago a merchant, who does a good business with the States, handed me a pattern, which he had received from a customer in Philadelphia. He said it was the product of an American mill, and all worsted, and should cost on this side 2s. 6d., or 60c., for 14-ounce. I examined the sample, and it looked and handled like all good worsted. In fact, it seemed like a cloth, at first glance, which I should have valued as being made to sell at the present time for \$2.25 a yard. It was a check, composed of two threads dark gray, two threads black warp and filling, with a dark red thread every 20, to make a subdued check. On dissecting the fabric, I discovered a fine piece of "bluffing" on the part of the maker of the cloth. The two threads, gray, and the thread of red were worsted, but the two threads of black, both warp and filling, were cotton, but the same thickness as the worsted, and spun so soft, and woven and finished so well, that my merchant friend himself declared it to be all worsted; but, in fact, 50 per cent. of the fabric was cotton."

THE LONDON WOOL SALES.

The closing of the last series on April 4th was marked by an absence of demand from the United States. Compared with the final rates of the previous series, these auctions have established an advance in the value of the general run of Australian merino greasy at 5 to 7½ per cent. Scoureds throughout have occupied a stronger position than greasy, and in their case the appreciation is frequently as much as 10 per cent., the gain being greater in medium and inferior sorts than in the very best. Another case in which it has been particularly noticeable was South African greasy wools of combing length. In competition for these the Yorkshire topmaker has been most keen, driving values up to the extent of nearly 10 per cent. In scoured wools from South Africa, the same thing holds good as in the case of Australian. Medium and inferior sorts have risen quite a penny in values, whereas superior parcels, both from the eastern and western provinces of the Cape, are no more than ¼ dearer. Australian merino lambs show a somewhat diversified result. St rt inferior and very faulty parcels remain very much as they were, but the medium sorts have improved 5 to 7½ per cent., and the choicest parcels may be said to have averaged fully 10 per cent. advance. About crossbreds, there is nothing fresh to report. During these auctions hardly a lot has come forward comparable with the choice parcels seen in January. For wools of good breed and fine quality the demand has tended to wax keener as the sales progressed, and these must be quoted about 7½ per cent. dearer than they were when the previous auctions closed.

With the addition of such parcels as were withdrawn in auction and not subsequently sold, the stock left on hand amounts to 16,000 bales. Of the total quantity catalogued (212,000 bales), 202,000 bales found purchasers, 113,000 bales of which, it is estimated, having been

secured for export. Only a few hundred bales were taken for the United States, and some 800 bales are credited to Russia; the bulk, therefore, has gone to Germany, France and Belgium. Considering that three-fourths of the supplies available consisted of wools of merino quality, and that the continent has appropriated a fair proportion of the crossbred descriptions, the total retained for home consumption, 89,000 bales, is a large one.

The quantity of wool sold falls short of that of last year to the extent of 166,000 bales. Of this deficit, 130,000 bales is accounted for by the diminution in United States purchases. Continental operations, which, last year, were upon an unusually small scale, show little change, while in the takings of the home trade there is a reduction of 31,000 bales.

The next series, it will be remembered, will begin May 3, the list of new arrivals for which will be closed on the day that a gross total of 300,000 bales is reached. As far as can be seen at present, the quantity available for sale will be somewhere in the neighborhood of 230,000 bales.

A KNIT GOODS TRUST IN THE UNITED STATES.

About forty manufacturers of knitted underwear, representing Amsterdam, Troy and Cohoes mills, met recently in New York and organized a trust or combine, to be known as the Knit Goods Manufacturing Company, and its object, according to the promoter of the enterprise, William H. Rowe, is to facilitate the manufacture and distribution of merchandise by the placing under one head of all the buying and selling transactions, from material to finished product. This central agency will be located in New York. It was decided to capitalize the company at \$30,000,000, \$10,000,000 of which will be issued in 6 per cent. gold bearing bonds to run 100 years. Preferred stock to the extent of \$5,000,000 and \$15,000,000 of common stock complete the capital.

The new feature of this combination, as distinguished from former associations, is the plan of the company to buy outright and control absolutely the mills which enter into the combination. The saving thus gained in the controlling of the variety of production, which is a great burden to the average mill, as well as the labor and detail incident to the buying and selling ends, is expected to offset many of the difficulties heretofore arising. Prices once established by this combination are expected to rule the market and be kept up without a break.

Canadian producers will have to watch this development with much interest.

THE TRUTH ON THE STREET.

The question of improving conditions in the English cotton trade is one which is receiving a good deal of attention at present. G. P. Holden, Manchester, has issued a pamphlet, in which he sets out a scheme for raising the tone of trade by establishing an authoritative statement of each day's business and in giving a true indication of the market. It is claimed that at present the reports published in the Manchester papers are entirely mislead-

ing, the amount of business done being concealed as far as possible under a series of complaints about the unsatisfactory state of trade. It is thought that with the publication of the facts the tone would be improved, because no matter how the papers talk about stagnation the daily sales are enormous, and if the public knew these daily amounts the demand would be still further stimulated. In order to show how ridiculous the present tactics of the cotton market would be if applied to any other phase of commercial life, we quote the following from Mr. Holden's pamphlet: - "What would be the present position of the 'Manchester Guardian' had it published, concerning its business, the reports we cotton manufacturers have published of our transactions during the last fifty years? Would any editor or proprietor of any newspaper, even the smallest, publish the paragraph, as below, in his own paper, with a view of strengthening his commercial position?"

"Our circulation to-day has been very small, and at prices that do not pay. Some small offers for advertisements, but at greatly reduced prices. North East and South-West Lancashire demand slightly improved, but this is owing to Derby Day. Our other branches of business are quiet and unchanged. Political demand still unsatisfactory."

VENTILATION OF TEXTILE FACTORIES AND DYEHOUSES, DRYING WOOL, ETC.

BY W. H. CASMEY.

A few weeks ago I had the privilege of giving a paper before the Yorkshire College Engineering Society on the broad principles of ventilation, and to-night I propose giving particulars as to how these principles have been or can be applied so as to benefit both the employer and the employee. The importance of this branch of sanitation is not fully recognized—in fact, in many places it is quite ignored. During my experience as a ventilating engineer I have repeatedly gone into factories where probably 500 people have been working, with every window and door closed, so that no fresh air could possibly enter. The effect on one entering from the fresh air is almost stifling. On occasion I have asked the person in charge, Why do you keep the rooms closed so much? and have been answered, The workpeople complain of draughts if the windows are open, and say if the rooms are warm and close they do not want so much to eat. They are quite correct in their reasons; draughts will be set if the ventilation consists of opening windows only, and the natural inclination for food will be at its minimum when the air breathed is robbed of some of its life-giving gas, oxygen. We are aware that a steam boiler cannot be worked economically if the products of combustion are taken from the flue and passed over the fire again, as in a very short time the fire will be damped out. What applies to the steam-raising plant applies with equal force to the workers. Combustion is governed by the same laws, whether in the furnace or in the human system. Such being the case, it is the duty of all to insist upon having an abundance of fresh air, without which we cannot keep

in health. The sense of sight and smell will protect us from partaking of impure food or water; foul air, however, if present, we are compelled to breathe, and the fouler the air the faster we breathe it, the lungs endeavoring in vain to get their proper supply of air for carrying on internal combustion.

Medical authorities assert that an adult person passes through his lungs 15 cub. ft. of air per hour, and to maintain the standard of purity in the air this should be multiplied by 250, which gives 3,750 cub. ft. per person per hour; and if this volume is reduced, it can only result in reducing the energies of the workers, and thereby the output from each machine. A loom, a spinning, or a winding frame represents so much capital, and it is the chief aim to make capital earn interest, and from observations, I am satisfied that few things would add so much to the prosperity of our country as workrooms and factories well warmed and ventilated. The worst enemy germs and bacteria can meet with is a good supply of fresh air, and the reverse holds good. A workroom badly ventilated is the best place for cultivating the germs of disease.

The importance of fresh air was recognized nearly one hundred years ago in connection with the textile trades, as we see by referring to the Act of Parliament, 1802. The first clause states that openings shall be made through the walls of the mills, so as to ensure a good supply of fresh air to the workers. Still, how little has been done comparatively? We see in the Cotton Cloth Factory Act of six years ago that not less than 600 cub. ft. of air per head per hour must be supplied, and a year or two later the same rule came into force for spinning-rooms. We, however, find that six times 600 cub. ft. are necessary, and in the next legislation on the subject we shall probably find the volume of air not specified, but what is of more importance, the quality, which will necessitate about 3,000 cub. ft. of air per hour being supplied. Our factory inspectors are now doing more in seeing to the sanitary conditions of our factories being attended to, and the following extracts from the reports of 1896 are worth notice:

One states. "I have been unable to get much good effected in the way of ventilation, I am afraid, by ordinary or natural means, for in most instances the results do not tempt an inspector to press the matter.

"Manufacturers, after all these years of apathy, are beginning to find that ventilating fans are really in the long run economical. One or two, who have begun with an 18-inch fan as an experiment, have ended by fitting them in almost every room. In all cases I have the same reply when visiting after one has been fitted: 'I do not know how we lived before.' For extracting dust, gases, fumes and hot air, they are invaluable in my experience. Considering that fans are now very reasonable in cost and do not require much power to drive them, it seems incredible how ignorant most occupiers are of their use, and how reluctant at first to introduce them. The increased activity and healthy look of the workers in a well-ventilated factory must compare favorably with the languid and pallid appearance of those in a close and defective one. I consider no method for the ventilation of factories can

approach that of H.M. superintending inspector, Mr. Osborn. In practice, his system has been found in every way satisfactory, and what applies to cotton-weaving sheds and flax-preparing rooms, applies pretty much to other industries. A number of small fans running at not too high a velocity are far better than one large one. The latter always tends to cause strong currents, amounting to draughts, in its vicinity, and seems to feed itself from the nearest inlet, or perhaps door, whereas the distant parts of the room remain unaffected.

"Very few who introduce exhaust fans provide for their being 'fed'—that is, for inlets to supply them being fitted—till pointed out. These inlets should be of almost the same area as the combined fans, and placed at the opposite side of the room, about 7 feet from the floor. Air space is not ventilation, but only a provision rendering ventilation possible. The 250 cubic feet per head is, per se, a sufficient supply of fresh air for a few minutes only. Vitiating air has to be constantly removed and fresh air constantly brought in in adequate volume, without undue exposure of the inmates of the room to the current."

Another inspector points out the absurdity of providing inlets without outlets, or vice versa. In many places no attempt seems to have been made to ventilate, and in others a hole, often without a grating even, is made through the wall near the top of the room, and this and the windows, "which are made to open," are shown to you as ventilators. In contrast to this there is a clothing factory where, I am informed, £3,000 was spent in ventilating the workrooms, and with very marked success.

And, yet again, one firm have had a highly satisfactory system of ventilation fixed in their various mills. They have not only placed fans in each room, but have erected a fan in each closet shaft. This is an admirable system, and prevents the other fans from drawing their air supply from the closet. I have often visited the rooms, but always found them free from effluvia in consequence of the efficiency of the closet fans. The head of the firm informs me that this is the most profitable outlay on their premises, as the health of their workpeople is more assured; they are also able to produce more work, and of a higher quality, through the improved health of the operatives. Since the erection of these fans I have been able to influence other occupiers in the silk trade to adopt the system of mechanical ventilation.

Another inspector states that "in the Liverpool district a great deal has been done during the year by way of ventilation through fans, cowls, etc. In one case where an order had twice been given and neglected, proceedings were taken and a fine inflicted, with the somewhat curious but satisfactory result that the occupier has since given a testimonial to the erectors of the fan expressing satisfaction at the wonderful improvement in the atmosphere of the works." Another states: "I am constantly hearing the remark that in summer the windows are frequently open, and it appears to be a popular notion that in bad weather and winter (the time when most gas is burnt) human beings can dispense with the luxury of clean air

It is constantly asserted that the workers object to ventilation, and, no doubt the confinement in close rooms makes them very susceptible to draughts; but the objection is not surprising when it is found that ventilation means the opening of a skylight just above their heads (through which the cold air falls like an avalanche upon them), or the raising of a window immediately in front of their work-benches."

E. H. Osborn in the same report states: "Even with ventilation far in excess of what is prescribed, it is not easy to reduce the temperatures in some rooms, owing to the heat produced by the high speed of the machinery, which raises the temperature from 12 to 20 degrees, so that the machines are not cooled even during the night, and some idea of the electrical condition generated may be formed from the effect upon the hair of the workers on a dry day. It has been pointed out that in many fine spinning-rooms the relative humidity falls below 40 per cent., which represents a dry and dusty atmosphere, very trying to any worker with a weak chest or subject to bronchial affections. This is confirmed by the experience of individuals with whom I have conversed, and who have been unable to work (with comfort) under such conditions, and have ceased to feel inconvenienced when working in a more normally humid atmosphere. Instances have come to my knowledge where less lassitude is experienced at the end of the day's work, and the appetite is visibly improved; one spinner estimated this benefit to himself at 'two loaves per week more.' At various times employers have been good enough to keep for me records of absences of work arising from sickness, and the cause therefor. These have not been on a sufficiently uniform system for tabulation, but they do not exhibit any special ailments which could be attributed to the environment of work in the sheds under the Act."

The importance, or I would rather say the necessity, of ventilation from a commercial as well as a sanitary point of view is most apparent, and the question then arises, how can the desired ends be attained? I think it is scarcely necessary before practical men to refer much to the so-called automatic ventilation; at any rate, a word or two will be sufficient to show its value. Thirteen cubic feet of air at 62° weighs 1 lb., and taking a room 60 feet by 40 feet by 13 feet high, the air in such a room will weigh about a ton. Can we then expect the air to move from such an enclosure without expending some force upon it? We might as well expect water to run up hill; air, like everything else, obeys the laws of gravity—warm ascending, and cold descending. You may often see, especially in our theatres, large centres of gas jets fixed at the base of an outlet trunk. These rarefy the air in the trunk, thus causing an upward flow. Such ventilation is, however, not automatic, but mechanical; the heat from the burners is power, just as much as that given off in our boiler furnaces, but which is passed through various stages until the belt or rope is reached.

Such methods of ventilation are most expensive, and for one-tenth the cost better results can be obtained. Where the gas jets are not handy, a vacuum pump ventilator is fixed on the roof, whose virtues consist in adapting itself

to circumstances when a good wind is blowing. Outside it works merrily, but when the air is still and ventilation is most needed, it follows its surroundings and is still also. Summed up, give me automatic ventilation, and I will introduce you to perpetual motion. As we find it necessary to expend power in moving economically the air through our mills and workshops, we must bring the ventilating fan to our aid. There are three types of fans we may consider. The pressure fan, used where a small volume of air at a high velocity or pressure is required, or where the air has considerable resistance to overcome. The open-bladed fan here considered is useful in moving large volumes of free air, but where even a very little resistance is to be overcome its duty is almost nil, the air slipping off the ends of the blades from centrifugal force. The third type, the Blackman, comes in between the two previously mentioned. You may see from the construction that it was designed for moving a maximum volume of air for a minimum of power, also that the question of pressure was considered by its inventor. Once the fan gets hold of the air it is passed forward, the curve of the blade making use of the centrifugal force by changing its direction to a line parallel to the fan spindle. What is lost in the straight-bladed fan comes out here as useful work. There are at the present time fans of this kind working against $\frac{3}{4}$ -in. W.G. We have, then, the pressure fan, the open-bladed fan and the close-bladed type, as last referred to. The close-bladed or Blackman type is, therefore, the most suitable appliance for general work. It would be impossible in a paper of reasonable length to state in detail the methods of dealing with the ventilation of each separate department of the textile trades. I will, therefore, consider the principal ones only, as what applies to them can to some extent be applied generally.

(To be continued.)

DYEING.*

Now we may devote a short time to a very important part of manufacturing—the dyeing. The designer may originate artistic and desirable patterns; stock may be worked through the carding, spinning and weaving rooms into fine and marketable yarns and fabrics. Unless the product of any factory is properly dyed; if goods do not match pattern, and are not according to the specification as to fastness, and are not dyed level, unless all the work allotted to the dye-house is well done, the goods will not be salable.

It is but a few years ago that not a few manufacturers expected that a dyer must be—shall we throw the mantle of charity over the poor man and say a little indiscreet—at least on Saturday, and he was regarded as quite successful by some if he was indiscreet on other days in the week. The man who could go to a manufacturer's office and meet him as a gentleman was almost sure to be debarred from the position he sought. He was looked upon as a kid-glove young man. His stature or his girth might not be what the manufacturer had

*From a lecture given by Frederick Haigh, before the students of the Philadelphia Textile School, January 18th, 1898.

been accustomed to see about, and it was feared that his education might interfere with running the dye-house well, that he would be effeminate and above his position. Some few young men who had the advantage of education and a little special training, took up the dyeing business. They found difficulty in getting a foothold, but after they had done so the results produced by them, especially in corporations where strict account was kept, showed such marked improvement in quality and so great reduction in expense that the kid glove young man is sought, the bars are in the path of the man he succeeded. This type of manufacturer is also passing, and broader-minded men are filling his place. His successors are founding and encouraging textile schools.

In talking to you about the cotton fiber I placed considerable stress upon the preliminary operations, the operations that must be performed before the fiber enters the dyehouse. Now I value the correct performance of preliminary operations upon the wool fiber no less than those upon the cotton fiber. Of course I refer to the scouring of wool. At the time when I entered the dyehouse, which you will see was not a very ancient period in history, the wool scourer was usually a character. Not unfrequently he was a man who had proven himself inefficient with the pick and shovel, and as a sort of lukewarm charity upon the manager he was employed to do the wool scouring. Now this man has probably wasted thousands of dollars, because when he scoured his wool clean he used alkali so strong that no inconsiderable part of the wool was dissolved and became an alkaline salt. This alkaline salt passed into the sewers or polluted the waters of rivers or brooks upon which the factories were located. This wool scourer, by no more exact quantitated methods than what we call rule of thumb, would heat the bath to a temperature determined by putting his hand in the scouring box, and put into the scouring box a greater or less quantity of alkali. Then, with sundry winks and in a stealthy manner, so that no one could steal his trade, he would drop in a little salt until he thought the liquor about the right heat and strength to scour the wool. Many times it was great quantities of yellow, greasy wool that he scoured. This wool never could be dyed as it should be, it could not be rescourd to be clean. When it was made into goods and came into the finishing room, these goods baffled the skill of the finisher to remove the grease. When a short period of time had elapsed, after the goods had been shipped away, the superintendent came around. He had a letter which he read to the finisher, a letter about the foul-smelling goods which the customers in New York or some other market justly complain about. It is almost in vain for the finisher to protest that the responsibility does not lie on his shoulders. The burden of proof was to show that he did not do it. "If you are not responsible, who is?" said the superintendent.

Those of you who become superintendents will acquire knowledge here that will enable you to tell whether your wool is scoured clean or not. I think none

of you will regard the man I have described as economical in the scouring department. I think none of you would accept a present of his services. You will want a man who uses his alkali and salt with discrimination. The man who can give you the greatest yield of wool and can give it to you clean, lofty, and in condition to spin, so that you can scour it when it comes to the finishing room, this sort of man is cheaper for your concern even though you pay him more wages than his predecessor received. Perhaps when you come to take the active charge of affairs the man whom I have described will have passed away. For your peace and comfort I hope he will.

We do work to-day upon entirely different principles from those upon which our fathers wrought. Dyes and drugs which were familiar to them are not seen about the dyehouse to-day; except it may be as dead stock in some unused corner of the drug room. It may never come into your experience to use cochineal. Probably none of you will ever dye anything with madder, except to satisfy your curiosity. The rapid development of the coal tar dyes may be brought home to you when I say that since I have been actively connected with the dyeing business nearly all the anilines, excepting fuchsin, have come into use, and all the alizarines, with the single exception of alizarine red, have been introduced. Figures are dry things to talk about, but you will pardon me if I introduce them to show the saving in cost that this discovery of alizarine has effected. In 1894 the value of the alizarine consumed in the United Kingdom was \$251,698, in the United States, \$790,011. Computing one pound of alizarine equivalent to nine pounds of madder, alizarine at 14 cents a pound, and madder at 8 cents a pound, the difference between the cost of alizarine and an equivalent color-producing quantity of madder would be \$1,399,041 in Great Britain and \$4,062,338 in the United States, or, for both countries, \$10,800,636.

Another preliminary operation which merits our consideration is the mordanting of wool. A great deal of felting is caused by want of knowledge of the laws governing operations which take place in a boiling kettle. When the sample cards issued by representative firms who deal in dyestuffs contain instructions to enter cloth and yarn in the cold or only lukewarm chrome baths, it is not to be wondered at that many dyers embrace the delusion. When dyeing pieces it reduces the time they have to be run if they are entered into a boiling bath. The agencies which cause them to shrink in either width or length are reduced. The steam used to heat a kettle containing pieces running over a reel is enormous and can well be saved. Again, time is wasted when they have been entered cold, because the mordanting does not begin to take place until nearly the boiling point has been reached. Goods will mordant as even where they are entered into the mordanting bath boiling as they will if they are entered cold. If uneven dyeings are being obtained, the dyer may well abandon search-

for the cause in the mordanting part of the operation and look elsewhere.

Where one is going to dye alizarines and the woods shades, either alone or in combination, the best mordant to use is from one to four per cent. of bichromate of potash together with two per cent. of lactic acid. The amount of chrome will be regulated by the depth of colour of the pattern. If you should be called upon to dye piece goods, enter them into a boiling bath. After they have run long enough to become thoroughly and evenly wet out you can first add your lactic acid (diluted to half a barrel) and then add the bichromate of potash (also dissolved in dilute solution) to the bath. You will see that you reduce the time required for mordanting by fully one-half, as all excepting very heavy goods can be mordanted in this way in the space of one to one and a quarter hours. After the goods have boiled long enough it is good practice to wash them off, or, at least, cool them off, in the box in which they have been mordanted. If they are taken hot from the mordanting box and removed directly to the washing machine they will much more readily absorb dirt and any dyestuff which they may by accident come in contact with than if the pieces are cool. I think none of you need be cautioned about having them thoroughly washed off after the mordanting bath.

When handling fine wools a great deal of felting may be saved by proper management of the steam. I am referring to the dyeing of loose stock. A kettle is no more boiling if the steam is turned on to it so that the wool and liquor it contains are blown to the ceiling than if a gentle ebullition is taking place. The principle of mordanting or dyeing is to manage the heat so that a gentle circulation is produced. A man who manages a kettle so that when the loose stock is thrown out a great rope of felted wool is found in the center of it is, or should be, a candidate for the "sack," as we say in the factories.

Wool dyes may be roughly classed under four heads, namely: The vegetable dyes, the acid aniline dyes, the alizarines, and indigo.

Indigo and madder are the earliest representatives of fast dyes, and the only dyes produced by nature that are fast. To madder belongs the credit of having been the cause of all the fast alizarine dyes, because in trying to produce turkey red as a substitute for madder the alizarines were discovered.

The acid dyes are being improved upon almost every day. The dyer expects to find in his morning's mail something new of this class of dyestuff or some old friend who has become better than he knew him the night before. By judicious selection the dyer can employ acid colors which stand light fairly well; also the action of street mud; unfortunately but few of them resist the action of soap.

The alizarine dyes are the fastest colors that have ever been produced. They leave nothing to be desired upon that point. Their advent has revolutionized work

in the dyehouse, and to them the position occupied by the dyer in advance to that occupied by the dyer of a generation or two ago is in a large measure due. No sort of dyeing requires better judgment and better command of one's resources than the production of fast colors on wool with the alizarine dyes. If one lack experience and be too timid to give the shade he is matching dyestuff enough to do it, consuming a long time with additions to the kettle, his goods will be felted. If he lack good judgment and give more of one particular sort of color than the shade he is trying to produce should have, it is impossible to discharge the color from the fabric. It takes the most careful handling to get alizarines to go on evenly, and when they are once dyed unevenly it is impossible to work them level. You will readily see that the dyer who is attempting to use the alizarine dyes will always have plenty with which to occupy his mind.

The vegetable dyes are fast passing away. They are used principally on low-grade goods, and the time when they will be abandoned, or practically abandoned, is probably not far off. Indigo will always retain some of its prestige. Certain lines of goods, carriage linings and billiard cloths, for instance, will perhaps be dyed with it for some time to come. It produces a peculiar shade which the chemist has not succeeded in producing dyes to imitate. Carriage linings dyed with indigo have a certain down shade and a certain cross shade, either of which can be matched with alizarine dyes, but not both of them at the same time.

The cotton colors are not as sharply defined as the wool colors. The substantive colors, in common parlance known as salt colors, dye upon cotton without any previous mordanting operation. The process is to add them, together with the salt, glauber salts or sal soda, or a combination of the three, to the dye bath. They are applied to the cotton boiling.

Some aniline dyestuffs work upon cotton at a temperature of 120 deg. to 160 deg. F. with the simple addition to the bath of 2 per cent of alum and 2 or 3 per cent. of glauber salts. Most of the alizarine dyes can be worked upon cotton, but the process of dyeing with them is extremely slow and expensive and very little in use.

A large proportion of the colors which are dyed today, exclusive of those used about knitting mills and for cheap colors, and for dyeing goods which are to stand fulling, are the cotton colors known as basic dyes. These dyestuffs produce the best-looking colors, being full and bright. The common way of producing them is to dye them upon a mordant of tannin or sumac and tartar emetic or antimony salt. Antimony salt is the cheaper of the two, but in my own practice I have found tartar emetic to exhaust the dye bath more thoroughly and to produce colors which resist the action of soap or washing in water better than those produced with antimony salt.

In conclusion I wish to speak of management in

the dyehouse, and what I say has been gathered from observation and experience of a few years' practice at that sort of thing. The greatest compliment that could be paid to a man managing a place is to have people who enter it unexpectedly see that things are not topsy-turvy. If a manager or superintendent walks into a department and sees a number of the men employed there jump to the nearest occupation they can find, if that manager is shrewd he will know that those men are not engaged in work which has been planned for them. He knows that the degree of concentration which the men exhibit at the time he is in the department cannot be kept up all day. On the other hand, when a manager enters a department and finds everything working smoothly, no sudden spurt, nothing unusual taking place, he knows that the work has been well planned and something is being accomplished.

We must remember that the men who work in the dyehouse, although they do the drudgery of life, are human. It is good practice always to speak to these men with the same degree of consideration that one would employ in conversing with a man who holds an equal or better position in the establishment where one may be located. Men will do more faithful and honest work if they see they are being treated like gentlemen than they will if sworn at or treated with no consideration. In nearly every instance they will strive to be what you appear to regard them.

The dyer has perhaps the most trying life of any person employed about a manufacturing establishment. His operations are directly the reverse of being mechanical, and many factors enter into them which even the learned chemists of the day are unable to explain. On the other hand the management of the factory seems to have less charity for the dyehouse than any other branch of it, consequently the dyer is working under high pressure nearly all of the time. Often-times, where one gives a true and faithful explanation of some difficulty, it is scoffed at or looked upon as a fairy story; therefore, it is better to accept the situation, keep quiet, and find a way out of the surrounding trials, than try and make people understand why things are not what one could wish them to be.

This leads me to the keynote of success. It may be expressed in a few words, many men who possess technical ability cannot manage a place well because they have not self-control; they are, therefore, weak in emergencies, and fail to inspire respect among those whom they direct. It has been said many years before our time, in earlier days of civilization. "He that ruleth his tongue is greater than he who taketh a city."

—We have received the report of the special committee of the National Association of Wool Manufacturers which was appointed to consider certain charges made by Frank P. Bennett, publisher of the "American Wool and Cotton Reporter," against officers and members of the association. The committee found Mr. Bennett's charges to be unfounded, and so has expelled Frank P. Bennett

from the membership of the association on account of a number of statements made in the "American Wool and Cotton Reporter" which reflected upon the motives of the secretary of the association in influencing recent tariff legislation. Mr. Bennett had accused Wm. Whitman and other members of the association of conspiracy and improper lobbying.

FAULTS IN WOOL.

BY A HAWKSWORTH.

So much has been written about wool, and yet so rarely do we see anything mentioned, save of its good properties, that we are almost given to understand that there are no faulty wools. This is all very well, as far as it goes, and very pleasing to the growers and many others, but, at the same time, it is misleading.

Wool is a very curious and sensitive fiber, and there is not another that is so liable to become faulty through many different causes, chief of which are sickness in sheep and climatic changes. A sheep one year will produce a fleece pleasing to the eye and touch in every respect, and it will be a commodity of great value to the manufacturer, who can make from it a fabric of artistic nature, with delicate colors, and a kind, silky texture. The next year the fleece of the same sheep may be quite the reverse, and of much less value.

In my opinion, unsoundness is the greatest fault of all. It indicates that the sheep has had sickness or insufficient food. Under these circumstances no sheep can produce a sound fleece. Unsoundness must be taken under two heads—tenderness and a break in wool. Tenderness really means that the wool is unsound throughout the whole length of the staple, and not in one particular part or place. To verify this statement, let any person take a staple of tender wool and apply a slight tension. It will be found that it gives way readily, and will come asunder easily, just the same as a piece of cotton wool. It may be that the growth looks healthy, and to all appearance perfectly sound, but when tested (all buyers try the soundness first, whether long or short wool be required), it will break off short in any part of the staple. The proper way to test wool for soundness is to take hold of the tip of a single staple with the thumb and finger of the right hand, drawing it through the thumb and fingers of the left, but leaving it attached to the main piece of wool. When you feel you have got the length, hold the top and bottom of the staple with the thumbs and fingers of each hand, then bring the second, or sometimes the third finger of the right hand smartly across the middle, and if it breaks or gives way, it is a faulty wool. This defect is caused by a lingering sickness, starvation, and especially a want of water. The break in wool is altogether different from tenderness, although in the trade they are synonymous. Above and below this break the wool has a perfectly sound growth, and this is where the difference is between a break in wool and a tender wool. This break is very acute in many instances, and upon holding up a staple by one end, I have many times seen the lower part fall off by its own weight. In most cases this break is readily observed by a thin line or growth running transversely across the staple. The two causes of a break are sudden sickness or a sudden change from a bare paddock to one having a copious supply of young and luxuriant herbage or grasses. During illness, the blood of the sheep naturally becomes poor, and, as a consequence, the plastic lymph, or elements from which wool is formed, derived, as it is, from the blood, causes a stoppage of growth. This stoppage is so apparent that the defect is perceptible throughout the whole fleece. On the other hand, when sheep have been running in bare paddocks, and then taken out and put into good, young, green feed, the growth takes

fresh start, and, therefore, shows a weakness, or mark, in a particular part. This mark is a break in wool.

Atrophy is a term never used among men regularly engaged in the wool trade. Nevertheless, such a term exists. It means wasting or withering away. The fiber appears thick and thin, and frequently one-half will have a normal growth, while the other will have a distinctly thinner or smaller diameter. This is caused more by a disease in the wool itself. Hypertrophy is a formation which is very faulty, and means a morbid enlargement or swelling. This enlargement may continue through the length of the fiber, until a diameter even twice as large as other parts is attained. When this happens the internal structure is affected, which greatly reduces the strength of the fiber.

The term "untrue" is very often confounded with unevenness, but strictly speaking, the former relates to the formation of the fiber, and the latter to the whole covering of the sheep. Untrueness is considered a great fault, both in the show yard, as well as by the manufacturer. The wool is generally perfectly sound, but has an irregular appearance. Upon examination it will be seen that in the staple there are sometimes two and three different formations. In one part the crimps are close and distinct, in another part they are wider or more undulating, while in the remaining part they will almost be straight. Usually these different formations will give different diameters. Lately I have spent much time in measuring the diameters of various kinds of wool, and in one pure merino fiber I found one give 1-1,700, 1-1,100, 1-790 of an inch. Untrueness is caused by changeable temperature, also a change of food, more especially among housed sheep. It often occurs that when two different types of merino sheep are put together the progeny will show untrueness in their wool. Then it is said that the breeds have not blended or nicked.

There are three distinct classes under this head, viz: tick-stained or dingy, discolored and stained. The former fault should not exist, and would not if wool growers would only take a little precaution. The fault is mostly confined to the eastern division in this colony, and is worst in heavily timbered country, such as ironbark. The wool has an objectionable, dull, heavy, greenish appearance, accompanied with a vile, nauseous smell, and when examined shows millions of minute tick eggs. This tick is a most persistently irritating little pest, causing the sheep to be restless, and constantly rubbing itself, which alone injures the wool. But the most objectionable part is that the tick robs the wool of its proper nourishment—the yolk—thus causing it to become delicate and often tender. As a natural consequence, the color of the wool must suffer, becoming lifeless, deadened, and dingy, however clean it may be when washed. Such wools can only be dyed into darker colors than the natural one. This fault can be very easily avoided by dipping the sheep, just after shearing, in preparations always on the market, and instead of having a dingy wool, there would be a bright, taking wool, which means an increase of at least 20 per pound; in other words, about £3 10s per bale, or in a clip of 50 bales, £175, which would pay for all trouble, and the shearing expenses. Discoloration is a fault not so easily remedied as dinginess. In discolored wool, the yolk is certainly the foundation of the trouble, as to remove the affected parts means a too severe scouring process on the free wool. The cause is not far to seek. Some sheep throw off a heavier and thicker yolk than others, and if this is checked through either sickness, excessive rains, or dust, it will sicken or become diseased. This stoppage of the flow of yolk is a serious matter. The gradually decomposing yolk clings to the fibers, hardens, and in time changes into various colors, from a dark brown to a pale pink. When such is the case, the brightness is never restored, and this is a great objection in the eyes of buyers. There is no remedy for this fault. What is known as stained altogether a different fault, and cannot possibly be avoided.

as the wool is actually burnt brown solely through urine. No scouring will remove the stain, and the wool is mostly used in black goods.

The under-mentioned are terms or names used in common with faulty wools, all of which (with one exception), could be avoided by careful and judicious sheep classing. My experience teaches me that such objectionable, faulty types of wool should be really foreign to Australia. I am sorry to say neglect, want of earnestness, and very probably, in many cases, a lack of knowledge are the true causes of such defects. Under this heading there is a long list of faulty wools, and, as my space is limited, condensed explanations will be given.

Crape Wool.—As the name implies, the formation resembles crape. The curves are small, cling together, are indistinct, and have a confused appearance. Such wools are particularly thin, and the qualities appear veiled by the confused formation.

Webby Wool.—The name indicates thinness, lightness, and cloud-like, reminding one of a cob-web. The fibers are very delicate, straight, the curves wide apart and indistinct. This class has lost all its quality, and is of very little value.

Veiled Wool.—Wool is said to be veiled when its curves are intermixed, and scarcely discernible. This happens when a portion of the fibers of the same group do not unite to form a staple. These overlapping fibers are said to be veiled.

Plain Wool.—Plain is the wool when the crimps are comparatively straight, or, in other words, wanting in character. The staple formation has ceased altogether, and the fleece is held together by the binders.

Cottony.—This is an objectionable wool, appearing light, fluffy, and handles like cotton. The formation is very indistinct, and, although fine, lacking quality.

Oakum-like.—Such is the term when the curves are flat, the structure lacking uniformity, and the fibers a confused mass.

Fluffy Wool.—The appearance of this type is of a bulky, bold growth, the staples are broad, but thin and light.

Cloudy Wool is a wool with an over-cast appearance. The formation is plain, and lacks density, although it might appear close and compact. Is wanting in both character and quality.

Wiry Wool.—A most objectionable type. The fibers are thick, straight, hard, and the crumpy structure is lost, and each grows up independently without any form of staple.

Stringy Wool.—This applies mostly to the staple formation, meaning that they are a thin-bodied class. The staples contain a small number of fibers, and appear very irregular, and sometimes are a little twisted. This is a sure sign of a thin, light fleece.

Curly Wool.—Of all wools this is one of the most objectionable. It consists of most of the imperfections to be found in wool—in fact, it may be said that the wool has changed almost to hair. The curves take all forms, all character is gone, the staples are irregular length, and have a thin, open growth.

Thread-like.—This name is given to wool, the curves of which are misformed, and take a spiral form. The strand formation is discontinued, and each fiber grows up independently.

Straight-haired.—When a wool has lost its character, it is called straight-haired. The fibers are plain, generally handle hard, and are devoid of elasticity.

Harsh wool is an unkind, hard-handling wool. Cottony means that the wool has become so entangled and interwoven that it becomes felted, and becomes board-like. Such wools are wanting in yolk, and through its absence, the fibers cling together and felt.

Noily Wool.—A wasty, fluffy, and perished wool is noily. Noils are combed out of the sound wool by the combing machine.—From the Sydney, (N. S. W.), Mail.

SCOURING WOOL.

I have observed, lately, some statistics and particulars of losses in weight in washing greasy wool of different descriptions, and undoubtedly they will be of interest to all wool people. The special point to be considered in washing wool is to cleanse it thoroughly, for spinning and other manufacturing operations, with the smallest possible loss of weight. Woolen and worsted yarns, in most cases, are sold by weight, and the value of the finished goods, afterwards, to a large extent, is governed by their weight. Therefore, it is a serious loss to waste or dissolve more than is necessary from the actual fiber of the wool. Besides the question of the actual loss in weight, there is the depreciation in the value of the wool, owing to its fiber being weakened and destroyed, partly by violent and unnecessary scouring, which at the same time has caused the loss in weight. Many scourers do not give as close attention to the best means of cleansing their wool as it deserves. Apparently they consider it as merely a preliminary operation, and quite a secondary consideration to the spinning and weaving that follow. The wool has to be cleansed somehow, and it is done in the cheapest manner possible, by scouring with soda ash or a strong alkaline soap. Nothing could be more objectionable than this mode of procedure. Not only is the dirt removed from the wool, and every trace of the lubricant that nature has placed in it taken away, but actually part of the substance of the wool is dissolved. All scourers who treat their wool in this manner, cannot be aware that, while the wool can be cleansed with a strong alkaline solution, it requires only a short time and a little extra heat to dissolve it altogether. The practical result is this: In order to save a small quantity of potash soap, which can be made easily at a cost of 1d. to 2d. per pound, according to circumstances, an appreciable weight of clean wool of about an average value of 18d per pound, is dissolved and washed away. In other words, a penny-wise-and-pound-foolish course is adopted.

From the above it will be very clear that neither soda ash nor a strong alkaline soap should be used for washing wool. A neutral potash soap only should be employed—that is to say, a soap containing no access of free alkali. Of course more soap will be necessary if it is neutral, but the gain in weight of the washed wool will be much greater. A potash soap should be used, as nature uses potash to the exclusion of soda in the composition of the "grease" or "yolk" in the wool fibers, when growing in their natural state. What can be accomplished in washing with a perfectly neutral potash soap was exemplified at a recent exhibition with a soap made on the spot for the use of the wool-washing machines, by the simple admixture of pure caustic potash and tallow or cottonseed oil by the cold process. Beyond the mere handle and appearance of the wool after washing, a series of experiments were conducted with this pure neutral potash soap, in one of the large wool-washing machines, which was put at the disposal for this purpose, in the following manner:

It was determined to wash a parcel of Sydney, Port Phillip and New Zealand wool carefully, noting the weight of the wool before and after washing, and obtaining a close valuation, in each case, of the greasy and washed wool. The work was kindly undertaken by one of the most eminent firms of London wool-brokers, without the actual loss in weight being known previously. This valuation was worked out in each case, in conjunction with the loss in weight, with the following result. The figures have been reduced to percentages for the convenience of calculation. Sydney wool, 100 pounds, valued in the grease at 11½d. per pound, gave 48½ pounds of clean wool, valued at 26d. per pound, or after deducting a loss in weight of 51½ pounds, there was an increase in actual value of about 10 per cent. Port Phillip wool, 100 pounds, valued in the grease at 11½d. per pound, gave 49½ pounds of clean wool,

valued at 27d. per pound, or after deducting a loss in weight of 50½ pounds, showed an increase in value of about 16 per cent. New Zealand wool, 100 pounds, valued in the grease at 12½d. per pound, gave 56 pounds of clean wool, valued at 25d. per pound, or after deducting 44 pounds loss in weight, showed an increase in value of about 12 per cent.

The quantity of neutral potash soap, used in each of the above cases, was about 5 pounds per 100 pounds of greasy wool washed, which, if taken at a cost of about 2d. per pound, would amount to 10d., or, say, 1 per cent. on the value of the wool. Taking the labor in washing and drying at about the same, the clear gain shown by washing in the best manner, amounted, on an average, to 10 per cent. on the value of the wool. To a certain extent the fine handle and loftiness of the wool told in its favor, but it was evident that the chief gain had been accomplished in the abnormally small loss in weight, as every manufacturer, on being shown the corresponding samples of washed and unwashed wool, estimated the loss in weight greater than it actually proved to be. This practical illustration undoubtedly will prove to woolen manufacturers and other scourers the gain in washing wool in a rational manner better than anything else. If soda ash had been employed, instead of the 5 pounds of neutral potash soap made from pure caustic potash and cottonseed oil, costing about 10d., the saving would have been half this amount; but, on the other hand, the loss in wool would have been 5 pounds of washed wool, valued at 10s. The subject of wool washing, from a scientific, as well as a practical, point of view, will repay the time devoted to it on the part of the woolen manufacturer, wool comber, or wool scourer on the station.—
Ex.

COP DYEING.

This is a subject of perennial interest, and is a most seductive field to the manufacturer who is endeavoring to effect economies in his methods, writes Dr. Harwood Huntington, in the Textile Colorist. It is a most alluring one, for the reason that the saving effected is very large where the dyeing and the methods of handling are satisfactory. There are certain things that a manufacturer must consider well before he tries cop dyeing, and this article is written with the idea of bringing these particular features to his attention. Perhaps the most trouble with the whole process is the inability to exactly reproduce shades, week in and week out. However much it may be contended that this is a mere matter of practice, it nevertheless remains the insuperable objection in the adoption of cop dyeing where dyeing is to be done on the commission basis. Where the manufacturer uses up his own dyeings, in other words, is not in the commission business, the cop dyeing machines are able to effect very great economies indeed. It was the writer's experience to be in very close contact with this cop dyeing, and for about three years the most persistent efforts were made to establish a commission business. The particular machine used in this endeavor to exploit the cop dyeing industry, was the Weber machine. The cops were dyed throughout, and there was little or no trouble in that regard. The question of obtaining the same shade week in and week out, however, was the thing that militated against the success of the industry, because the problem, as presented to the commission dyer, was not to dye a red but to dye this red. Now, when on the other hand these particular dyeings are dyed at a mill where the manufacturer is using his own dyeings, there is no question but that the expense of reeling into hanks and then winding into proper form for the shuttle could be saved. This is the saving which the cop dyeing effects. In a good number of yarns the saving is very large. The finer the yarn the larger the economy.

The question of the waste through crushed cops is a very

annoying one at first, but it would seem as though when the mangle hands got used to working these cops, little or no waste would result from this source of error.

In the southern field there must be a number of mills who would find it to their advantage to exploit the process of cop dyeing. Surely there is an economy and a revenue which would amply justify the most thorough effort.

BURLING, MENDING, ETC.

During the past ten years, since first writing upon this subject, we have had many and various opportunities to see and test the different modes of procedure for this, the initial stage of the finishing process. Having well-defined ideas of our own on the subject, and keeping our eyes open, has enabled us to see many things, which might, with profit, be done different, and therefore do not hesitate to give an idea of how the work ought to be performed to give the best results, writes Celsius, in the Boston Journal of Commerce. Many mills have this branch of the work almost like a separate department, that is, under the supervision of the finisher, with an experienced head to be held immediately responsible to the finisher for the proper performance of the work entrusted to his care. This is as it should be, for the overseer or inspector should be able to devote all his time and energy to this part of the work in order to obtain the best results, which, if the burling is done under the immediate charge of the finisher, will not always be the case. The finisher has so many different things to look after, that it is really impossible for him to give the close attention that this part of the work demands. Wherever this work is burdened on the finisher, more or less strings, which mean deductions for imperfections, will be the result. The burling boards should be smooth and well joined, so that every knot and bunch may be readily felt by the burler. They are sometimes covered with zinc, which forms a first-rate surface for this purpose, and if closely watched is the best thing obtainable, but by means of the constant friction, which is caused by pulling the cloth over the edges, are very apt to wear thin, and at last parts of it become detached, which are as sharp as a razor and are the cause of numerous holes. If the boards are not covered with zinc, the girls are apt to make them uneven by playfully sticking the point of the irons into them, and unless closely watched common boards will soon wear out in this way.

The first operation to be performed after the goods come from the weave room, is to sew the number and style on them. Some managers delight in a good deal of red tape, and often commence here with it, by causing the number, style, yards and weight to be sewn on the pieces. Unless this is done for the guidance of the fuller, we fail to see any other benefit to be derived from this labor, and as far as the fuller is concerned, it is surely thrown away, for in any event the loom ticket should be left on the goods for the fuller to take off and preserve. The number should always be sewn on the back of the goods, on the ticket end and on the left side reaching from the list inward. But this rule is not arbitrary, and this part is often performed differently at different mills. For practical purposes, however, the way as indicated will be found to be the best and is used in most mills. The sewing on of the number may be properly performed by the burlers when they take a fresh piece to burl, and before they do anything to it, but sometimes it is found practicable to have one certain person do this work. The burling should always be commenced on the back of the piece, and everything must be carefully removed, which will, in any sense, interfere with the smoothness of the surface. For this work we use what are termed burling irons, of which there are several patterns in use, which it is needless to mention, for, after all, as much work and as good work can be performed with the old-fashioned irons as with any other. Small shears form one of the things the burlers should have. All the knots

should be drawn carefully to the surface and cut off, but not too short; also the threads must not be unduly tightened when drawing out knots, for then they will crawl back, making additional work for the menders. This is not of as much importance on the back as it is on the face.

A piece of chalk is another thing with which the burlers should be provided, and in the proper use of which they should be carefully instructed. After the back has been gone over in a careful manner, and everything done that should be done, the face is taken in hand. As soon as this part of the work is reached, it becomes necessary to instruct the burlers in the use they are to make of the chalk. Going over the piece as they have to, nothing should escape their notice, and if they are held to it much time is saved both to the inspector as well as the menders. Every imperfection should be marked by them, no matter of what nature it may be, so long as any part of the face does not seem in strict accord with the rest, have it marked and thus have the inspector's attention called to it, who will determine the nature and remedy of the same. While this will materially lessen the labor of the inspector, it will not detract very largely from the amount of work performed by the burlers, and more than that it will be the means of keeping every one on the alert for imperfections, thus reducing the chances of any of them slipping by. These are considerations well worth striving for, for every one knows that the goods will not be any too perfect under the most favorable circumstances.

In burling the face, extra care should be used in the removing of slugs and bunches. These should be drawn out slowly, a little at a time, and not by taking hold of the whole bunch and jerking it out, as is only too often the case. Such action will, in the end, do more harm than good, for any injury done to the threads will take time to remedy, so that the time gained by the quicker method is lost by the damage done to the goods. The knots must be drawn to the surface carefully, and on most kinds of the goods may be left there for the shears to cut off. On the face we are often troubled by what are termed runners, that is, the filling is drawn in on the sides, sometimes to the extent of five or six inches, and this will have to be removed very judiciously. It is at best, a difficult task to perform, and should be done by the older or more experienced hands, for the removing of runners, if done at all carelessly, is sure to make considerable work for the menders.

DESIGNING FIGURED DRESS GOODS.

Not long ago a traveler for one of our Huddersfield-American houses, and one who had spent considerable time in your markets, in the interests of his firm, writes the Bradford correspondent of the Textile Manufacturers' Journal, was induced to give a few of his ideas before a Yorkshire textile audience, on his impressions and observations respecting your domestic manufacturers. After speaking of the great difference between a low and a high tariff to such houses as he represented, he went on to speak of the boasted superiority of American manufacturers, over those of this district, and waxing rather cynical, he observed: "It is a surprise to me that they persist in putting on a high tariff to keep English made goods out of their country. There is no greater argument in favor of the English, French, or German manufactures being superior to the American manufactures, than in the enforcement of this duty. It means that he (the American), considers himself 50 per cent. less capable or skillful than his foreign competitors." What nonsense. The poor fool cannot see that your tariff is put on to keep out of your country such shoddy goods as he is trying to sell, such as Batley and even Huddersfield low shoddy woolens at 36 cents a yard, 54 inches. But I pass such arrant nonsense by as of no importance whatever. But here is a passage in his speech which is most

weighty, and he seems to me to hold up the mirror to all your American manufacturers. Continuing, he says, "that even with this advantage over us, the American buyer prefers the English product. The reason for this is that the Englishman produces better styles, clearer colors, a more effective combination, and a better finished article than his American competitor. Instead of setting himself to the improvement of his styles, the American manufacturer calls upon the political economist and the government to raise the tariff against his more skilful competitor. It must be acknowledged that for style and neatness of effect, the American buyer shows as much taste and discrimination as the buyer of any other country. Loud styles will not sell in America, nor large check effects, in Scotch tweeds, at any price, but worsted cloths of neat, smart styles, and subdued checks always find a good sale. The hopsack, or mat weaves, find favor with many buyers, but a diagonal twill of a Bismarck or a Clay worsted style can always be considered a safe article." How far the above statement is correct, I leave readers of the Journal to judge, but it set me thinking and I asked myself the question. What can be done to throw some light on the way our Yorkshire manufacturers go about their work of cloth and design construction?

Perhaps there is no department in the textile trade of Bradford which is so apparent to-day and so prosperous as the dress goods trade. The fact that this country imported less, by over a million pounds sterling, in dress fabrics from the continent, during the last six months, is clear evidence as to the position Bradford dress goods occupy in our own home markets at this moment. But it is a fact that there is no part of the designer's art which makes such demands upon a man as the fancy dress goods trade. A designer in this branch has to keep his eye open for any changes in fashion, which come very rapidly nowadays, and if he wishes to be at the front, it is always his endeavor to be the first in the market with new styles; consequently he must have a practical system of working his materials thoroughly fixed in his mind, and a ready way of applying them. He must also possess a good eye for form, and good taste in color, combined with a knowledge of the construction of cloths and the various fibers from which they are made. In touching upon this important subject, in the interest of domestic manufacturers, it must be admitted that the most successful firms are those which most readily adapt themselves, from season to season, to the vagaries of fashion. A manufacturer might make a good style of cloth, which would sell well this season, but probably before the next comes round, it is copied in a lower material, and therefore no longer worth following, so that the wisest aim is to endeavor to produce the best and newest styles in cloths, and usually the best price will follow. Two of the best firms I know in this district, who are always busy, adopt this very plan. Their designers are always at it, endeavoring to produce something new. They do not wait until all their orders are complete, and they are slack; they simply keep on pegging away, producing something new, and on these latest things they can command a decent profit. We, on this side, are constantly being told that our only hope, in competition with other countries, lies in our capabilities of producing new and excellent articles, and so if we are still to keep our position, it must be by producing original and good styles, and by ceasing to copy, as copying means that we are making exactly what many other people are doing. Then comes a question of cutting down prices, so that those who can name the lowest get the work. And this very same principle applies, with equal force, on your side, and domestic makers cannot do better than to adopt this very line of action if they would increase and maintain their business.

One very rarely sees two ladies' dresses alike. A lady nowadays does not care to see any one else with a dress like hers, this has come about by the large choice of cloths on the market. Manufacturers in the past did not care to make less

than six pieces to any design, but to-day they have often to be content with only two pieces, and it will be seen plainly that with all this necessary variety, a man must have a good general knowledge. This is where our technical schools and textile societies are doing good, in extending the knowledge of the methods of making various fabrics, and in training the students, so that they may have no difficulty in producing any class of material that is required. A man may be brought up with a firm which makes only a few of the many fabrics on the market, consequently, if it were not for the technical schools etc., he might remain practically ignorant of the other fabrics which they did not make.

A student who wishes to be a successful designer, should be first a good freehand drawer. Professor Beaumont, of the Yorkshire College, knows this thoroughly, and he insists on all his students going through a course or two of drawing, maintaining that all designers should be able to draw plain form, and also to deal with the various geometrical forms of treatment. Having done this, he has no difficulty in applying his art to what he learns at the textile classes. There is no part of the manufacture in which greater taste is displayed than in making dress goods, and there is no doubt that the ladies of to-day, be they American or English, appreciate more than ever, the good taste which is displayed in producing such fabrics, but they are oftentimes led by fashion, not considering whether the material be suitable or serviceable. But an up-to-date designer will make what is wanted, whether it be good or not, and it should always be his endeavor to produce something new, both in form and color, coupled with good and economical construction of cloth.

ARTIFICIAL DYESTUFFS.

ALIZARINE BLACK-BAYER

This well known product discovered and brought out some time ago by the Farbenfabriken of Elberfeld, Germany, is on account of its recent reduction in price, steadily replacing logwood. Alizarine Black-Bayer differs only from the various alizarines in its method of application, viz. Dye with 4 to 5% of color boiling, and sufficient acetic acid to completely exhaust the bath, added at intervals, then, after-chrome in the same bath by adding 1 to 2% Bichrome (well dissolved), and boiling for half an hour longer.

The chief points of this wool color are,—the fine full rich blacks produced—but more especially its fastness to all agents. Exposed to sunlight for several months it does not alter its shade and it will stand the severest milling with white. Comparing the strength and value of this fast black with other products, it is found to be a very cheap color. In order that dyers might satisfy themselves as to the absolute fastness of this color, piece goods samples attached to cards have been prepared which may be dated and hung up conveniently in an office or dye-house window.

FUSTIC SUBSTITUTES.

A pattern card has just been prepared—Fustic Substitutes on Wool No. 636—which shows the alizarine, diamond and chrome yellows on wool. Alizarine Yellow 3 G., Diamond Yellow G., Diamond Flavine G., are much the same in shade. Chrome Yellow D. is much duller. Anthracene Yellow is much Greener and Alizarine Yellow R. extra is the reddest of all the Yellows. Mordant: 3% Bichromate of Potash, 2½% Tartar. These colors dye on the above Chrome mordant, boiling one and one half hours with the addition of 2 to 4% of Acetic Acid.

Any of these alizarine yellows are intended to substitute or replace fustic and while being much the same in shade have the advantage over fustic of being absolutely fast colors.

For latest shade card, circular and samples, apply to the Dominion Dyewood and Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken vorm. Friedr Bayer & Co., Elberfeld, Germany.

TEXTILE SPINNING FIBERS. *

[Concluded]

Many of you are aware that I have always laid great stress on the proper mixing of cotton, and I have reason for it. I have seen several plans of mixing—some of them cannot be condemned too much—and only one that gives the best results. I have seen some curious things traced back to the mixing. I will give you one or two illustrations on this point. No spinner needs to expect a regular yarn who mixes a cotton waste with raw cotton in the usual way of making a mixing. I do not make this statement at random, but speak from experience, and I know it is a positive risk to mix these two classes of material together in any way except on the lap machine. You can put what I have stated here to the test if you like. Make some yarn for the manufacture of cotton flannel or flannelette out of cotton and cotton waste mixed together in the usual way of mixing cotton. When the cloth woven from such yarn comes to be raised, to give it the softness and feel of flannel, you will no doubt find the fiber on some parts of the cloth properly raised, while on other parts the warp may be as bare as the palm of your hand. This phenomenon has occurred more than once or twice in my experience. I have here a small case containing two samples of cotton flannel, numbered one and two. Number two is woven with a coarse-weft with the necessary twist for cotton flannels, and which should also present a good body of fiber to the teeth of the raising machine. It will then yield a good nap of fiber, completely covering up the make of the cloth, as shown by this sample. In sample number one the weft is finer, hence it requires more twist and presents a less body of fibers to be raised into a nap, and as a consequence the make of the cloth can be seen through the thin covering of fiber. I have drawn two shoots of weft, one from each piece of cloth, and stretched them across the black cardboard to show the difference that results when the construction of the weft is made on different lines. But it gives no greater contrast than that you may expect if you mix wide contrasts of staple together, and especially if you make up the mixture in the mixing before it passes through the opener. A manufacturer making pile goods recently requested me to give him an opinion upon a complaint he had had from the finisher of his cloth, to the effect that during the process of cropping and raising the pile, after the cloth had been cut, patches of the pile came out, leaving the warp almost bare. I was given full liberty to go through the mill and see every process, with the result that I found he was mixing a certain proportion of cotton combings in his mixing of raw cotton, and he could not have hit on a class of waste better suited to give the results he met with if he had tried his best. I suggested that, if he must use combings, or any other cotton waste, never to think of mixing it with raw cotton; but to make separate mixings of waste and of cotton, and mix the two on the lap machine. At the same time I told him he must not expect that the loss in finishing would be as small as if cotton alone was used, nor would the pile look as full, but the other evil would disappear.

Woolen spinners who use cotton and wool never mix the two in a careless manner. They used to ask for the cotton in the carded sliver, and they put up so many slivers at the scribbler, thus blending the two uniformly together. I have made up thousands of pounds of card sliver to be sold to wool spinners. I think nothing illustrates this part of our subject so forcibly as the remark of an old Lancashire spinner who, when solicited to buy some card fly to cheapen his mixing, said: "Na'w al a nowt to do we't, if its flown once it'll fly again." But this was in days when card fly was not much inferior to cotton. But there is very little fly made now, and I often wonder if our yarns have not suffered as a result.

Something has already been said regarding hard or harsh cotton. This grade of cotton is not peculiar to any one country. There is a sample here from India, the whole of the seeds and fiber of which hang outside the pod or boll, the fiber holding together as tenaciously as if it was wool. At home I have a sample of unginced cotton from Malta, the seeds of which it is difficult to separate, the fiber holds so fast together. All Levant cottons grown from native seed are naturally harsh. A considerable bulk of Brazilian and of white Egyptian are of the same style; these are now largely used for cotton hosiery or mixing with short wools. Cotton spinners are sometimes tempted to

mix harsh cottons with the soft grades of American during seasons of scarcity or plentifulness of one or the other, but it is never with good results. The harshness and extraordinary coherent quality the different grades of harsh cotton possess are not due to any extra natural twist the fiber possesses over that of softer cotton; in fact, the harsh grades have often less natural twist in the fiber.

The cause of harshness is a structural one, and would make a subject for an entire lecture for anyone who chose to go into it. What is to be discussed here is the capability of such fibers for spinning purposes. The true position of these harsh cottons is in spinning hosiery yarns, and blending with wool for softening purposes. To mix them with softer grades and to expect a good, level yarn would lead to complete disappointment; they never blend, but part company at every opportunity, leaving the yarn full of weak, thin places, and giving it a woolly feel, whether such is desired or not. Very harsh cottons have been, and are still at times, mixed with softer grades to make specialties of cotton yarns which must have a woolly feel, but such yarns have to be spun on the wool principle before alluded to. I well remember many years ago vast quantities of yarn being imported to this country from Saxony to weave cotton winceys. In fact, the trade was so great that several spinners here contemplated going into it, under the impression that they could spin it by their usual system of drawing rollers. Samples of this yarn were sent to me for examination, and to give an opinion how it was made. I saw at once that advantage had been taken of the short-wool system of spinning, by which a little long, soft, staple cotton had been mixed with a very harsh and coarse short cotton; the long staple formed the core of the thread, and the coarse fiber clung to the outside. Some times the short harsh staple would be dyed, while the soft staple was left in the white, and in this form the yarn had a more distinct woolly appearance. No one in this country that I have heard of ever began to spin the yarn, and the Germans kept it till the fashions changed, when it died out; it, however, made a capital imitation of woolen goods. Such imitations used to be considered frauds, and so they are when represented as the genuine article. Some little time ago a sample of yarn was sent to me by a party to whom it had been represented as a pure wool yarn. I was requested to examine it and report if it was a wool yarn, or if not all wool, what percentage of wool there was in it. I made the examination, with the result that I could not find a wool fiber in it. It was made from an undressed class of vegetable fiber, and in this undressed state possessed considerable asperity, which gave a woolly feel to the yarn.

When we pass our views of the several textile fibers before you and you see the great difference there is in the diameter of most fibers, you will pardon me, then, for having laid the stress I have done in all my lectures on a proper selection of the raw material when a good regular yarn is wanted. I shall be able to show you a difference of 100 per cent. in the diameter of the fiber, both in wool and cotton, while in other textile fibers a greater difference than this will be found to exist. Such differences have always existed and will continue when we have gone, they are largely influenced by cultivation in the vegetable fibers, but in wool, climatic changes, quantity and quality of food the animal lives on are things that affect the character of fiber it yields. These are matters we cannot alter, and what is wanted is a more cultivated sense of sight and touch in those who handle the raw material.

I know two spinners who both have the same class of machinery, and both go to the same market to buy their cotton; one can spin a yarn that will weave a fine grade of sateens without a blemish, while the other cannot spin a yarn that will weave an ordinary sateen without blemishes. I have been through the latter spinner's mill, and I dare engage to make a yarn on his machinery that will compete with his rival's, and I would not alter a single thing outside the cotton mixing room, except to change a tooth to regulate counts or twist. I gave offence to this spinner when I told him he had the matter in his own hands, and that his machinery was quite capable of producing as good a yarn as his rival's if he would supply it with as good a selection of cotton. I could enumerate other cases of this kind, but these are enough; they are not easy matters to deal with because every spinner knows his own business better than any one else, and it is better he should think so rather than lose confidence in himself. In any case, however, the man who can make a yarn that will weave a fine grade of

*A Lecture delivered at Shaw, by John Butterworth, F.R.M.S.

saetens is a good spinner. A yarn of this kind must be absolutely clean and level (as far as that term can be applied). It must also be soft, and the fibers composing the yarn must lie as parallel as possible, to give the yarn as much luster as can be acquired. These are requirements that an outside manager can seldom attain to, unless he has had a considerable inside experience previously.

I must draw this lecture to a close, and I would urge those who are interested in textile work to make a special study of what can be done, and what cannot be done, with the various textile fibers. They are ahead of us in this respect on the continent, as some of our samples will show. I wish to say in conclusion that this is the last public lecture I shall give on textile matters, and in bidding you adieu allow me to emphasize a statement I made in my first lecture given on this subject, namely, "That my experience and my microscope still bear me out in saying, whatever difference exists in cotton, however slight, the same difference can either be seen or felt by a practiced hand; and any difference that exists between two cottons also exists in the yarn made from them." Allow me to remark, however, in taking leave of this subject as far as giving public lectures upon it goes, I do not do so because I think it is exhausted. As I have just stated above, I believe the continentals understand the capabilities of textile fibers better than we do here. There are many structural features in fibers that are little understood yet, and there are also many peculiarities in the behavior of fibers in the spinning and manufacturing processes that are even less understood. With me, cotton spinning and manufacturing have been a hobby as well as a business, and yet I can honestly say that with all I have seen and learnt of it I feel that I know very little. Still, every fresh case or difficulty in spinning and manufacture that comes before me stimulates my desire to know more, and though I retire from lecturing on textile matters, I shall not give up helping in a quiet way those who have had less opportunity than myself and who feel their want of experience.

DESIGNING.

How may I become thoroughly practical in the art of designing? is one of those questions that the young man in our mills who aspires to the position of designer is continually asking, and it is for the benefit of such young men that I shall endeavor to answer their inquiry to the best of my knowledge, giving a few suggestions which have been helpful to the writer, and which, like the sign-post, may show the way to some who are commencing to travel along this road, says a writer in the "Industrial Record."

Every observing young man has doubtless noticed the wide differences that exist between the minds of those with whom he comes in contact. Some men are dull and sluggish, while others sparkle with bright ideas, some lack depth and stability, while others possess these characteristics in an eminent degree. One of the questions, therefore, that constantly presents itself to the inquiring mind is. How and why is this or that man successful, while another seems doomed to ignominious failure. The conclusions usually reached are that the unsuccessful man has made a mistake in the selection of his vocation. Man know thyself is one of the fundamental keynotes to success, and consequently every one should try and find out at the commencement of life what line of effort he is most interested in, select some work which is adapted to his mental status, and which he feels a delight in doing. Choose something upon which you know you can concentrate your energies and be interested in continually, and take proper time to test yourself rather than waste your best years only to find that you have made a mistake. A few months steady application to the work before you will suffice to show if you are on the right track.

Do not think because some acquaintance has achieved success as a designer that you will do the same thing, for the minds of men are as widely different in their growth and structure as the leaves of a tree or the blades of grass on the hillside, and hence as all men are not adapted for the same kind of work they need to make a right selection of their proper work in life. In time they may become specialists in that line of work which is to them the most interesting and at the same time a continually delightful study. The first important step then is for the young man to be quite positive that he sees beauty and symmetry in cloth, that he enjoys working among it and finds himself attracted towards those windows and stores where the product of the

skill and ingenuity of the weaver and designer are displayed in endless variety.

His first work should be the laying of a substantial foundation upon which the whole superstructure of his future labors can be securely built. To reach this end he should become a thoroughly practical weaver and loom fixer, gaining a knowledge of the machines in this way through whose medium he will be able to produce certain results in the future. By so doing he will not have to depend on the efforts of others but will be qualified to instruct them in any practical work which is to be done in the weave room when changing to new lines of goods. How often are designers known to be experts in the theoretical part of the business and the laying out of the work on paper, but when it comes to doing any practical work on the machines they are not at home, or in other words, are all at sea, proving beyond a doubt that they have neglected to learn this most important and requisite branch of the art. Having reached the time in his experience when he can weave and fix a section of looms, the student should begin to learn the art of combining threads to form weaves, and to aid him in this work he needs a good text-book on the subject from which to study the various subdivisions of weaving, twills, satins, etc., with their derivative weaves, for this knowledge can only be mastered by patient, determined effort, and it is advisable to go over these topics continually until they are thoroughly understood and the student can construct new designs from the rules given. Such knowledge will save a vast amount of work in the future, for it should be remembered that "picking out" is a very small part of designing and that the expert designer who knows the various weaves as well as his alphabet needs to do little of it, except when he gets some complicated or broken up effect to construct. If a sample belongs to any of the subdivision of weaves whose construction he has learned so well, the practical designer knows the weave almost as quickly as he sees the cloth and can put it on paper without wasting time and labor picking it out. Such a case illustrates well the benefits of early training.

Other books may now be included in the young student's library, that is, more profound and deeper works, where the subject is handled in a thoroughly scientific manner and beginners often find it difficult to follow; but not so the advanced student, for he goes below the surface and is soon impressed with the lucid reasoning and the immense scope of the knowledge contained in such works. A careful study of different works on this subject is something that the student cannot afford to omit.

The study of cross weaving is very interesting and one that opens up a wide field to the student, for in combination with other weaves very novel and pleasing effects can be produced by it. Although many things have been almost entirely superseded by recent improvements in the lace machine, yet it is now quite practicable to weave lenos on a double acting machine, and at a far greater speed than could be run on the single lift dobbie, the consequence being that leno combined with other weaves now figures very extensively in the productions of draperies and dress goods.

One of the best helps to the student is a varied collection of samples of fancy cloths. He should investigate their structure and endeavor to lay them out so as to get the best results. It is best to keep posted on the latest demands of fashion, and strive to excel in your calling, for if specialists in other lines need to be informed about the latest things being done in their several spheres, so also is it necessary for designers to be up to date instead of wasting time and effort producing effects which were on the market two or three seasons ago and which have been compelled to take a back seat in favor of the craze for something new.

The writer has found it of great advantage to keep a proper record of all theoretical and practical work. Such a method is advocated by many practical mill men, and as there are so many things about a mill to learn, the designer and others as well are very likely to forget many of the things which have come up in their experience unless a record of their progress is made.

The qualities which the designer should strive to cultivate are patience, perseverance, good taste, sound judgment and keen observation. A firm determination backed by persistent effort is also desirable, so as to master the principles and details which belong to his calling.

A man to achieve success in any sphere of labor should love the work, and the point for the student to keep in mind is so to work as to make himself worth something, leaving the result to take care of itself

DIAMINE DYES IN DYEING UNION (COTTON-WOOL) FABRICS.

BY GEORGE H. HURST, F.C.S.

The steady progress in the application of the diamine colors in the various branches of the uniform dyeing industry has been noteworthy and merits some attention, and dyers may appreciate having put before them the results of experience in the dyeing of unions with these dyes. The most important feature of the diamine dyes is to dye wool and cotton uniformly in one bath, and in consequence they have received varied and extensive application in dyeing union fabrics of all kinds. Regarding the best method of dyeing we may remark that dyeing in neutral baths has yielded the most satisfactory results in practical working. The dyeing is done in a boiling hot or in a slightly boiling bath, with addition of $6\frac{1}{2}$ ounces crystallized Glauber's salt per gallon water for the first bath, 20 per cent crystallized Glauber's salt reckoned upon the weight of the goods in standing kettles. In dyeing unions the dye-bath must be as concentrated as possible, and must not contain more than from 20 to 25 times as much water as the goods weigh. In this respect it may serve as a guide that concentrated baths are best used for dyeing dark shades, whilst light shades can be dyed in more dilute baths. The most important factor for producing uniform dyeings is the appropriate regulation of the temperature of the dye-bath. Regarding this point the dyer must bear in mind that diamine dyes possess a greater affinity for the cotton, if the operation is carried on below the boiling point, and they only go on the wool when the bath is boiling, and the more so the longer the goods are boiled. The following members of this group have yielded very good results on a large scale in dyeing union goods. They do not all possess the same affinity to the wool and cotton fibers. We, therefore, classify them as follows. Group I., dyestuffs which dye cotton and wool to the same shade, or very nearly so, Group II., dyestuffs which dye the cotton a deeper shade than the wool, Group III., dyestuffs which dye the wool a deeper shade than the cotton, Group IV., dyestuffs which produce different shades on the two fibers. And this classification has been followed in the annexed list of diamine dyes and the group being indicated by a Roman numeral as (IV.). Diamine Gold (III.), Fast Yellow A (II.), Fast Yellow B (I.), Orange G (II.), Orange D (II.), Orange B (I.), Rose BD (I.), Scarlet B (III.), Scarlet 3B (III.), Red 3B (I.), Fast Red F (I.), Bordeaux B (I.), Bordeaux S (III.), Brown M (I.), Brown V (II.), Brown 3G (I.), Catechine G (II.), Catechine B (II.), Bronze G (IV.), Sky Blue (II.), Sky Blue II (I.), Blue RW (III.), Blue 3B (II.), Blue 2B (III.), Blue BX (I.), Blue BG (II.), Blue 3R (IV.), Brilliant Blue G (II.), New Blue G (I.), New Blue R (II.), Steel Blue L (II.), Green B (I.), Green G (III.), Black RO (II.), Black BO (II.), Black BH (II.), Black HW (I.), Dark Blue B (I.), Diamine Violet N (II.), Union Black (I.), Union Black C (I.), Oxy-Diamine Black SOOO (II.), Oxy-Diamine Black BM (I.), Diamine Violet N (II.), Thioflavine S (I). For use along with those which do not dye the wool as strongly as they do the cotton, and which, therefore, require a dye adding to shade the wool, there may be used the following dyes

Naphthol Blue G, Naphthol Blue Black, Formyl Violet 6B, Formyl Violet 10B, Alizarine Lanacyl Blue BB, Alizarine Lanacyl Blue R, Alizarine Lanacyl Navy Blue B, Thiocarmine R Powder, Alkaline Blue 6B—3R, Formyl Violet S₄B, Alkaline Violet CA, Alizarine Lanacyl Violet B, Rocceline, Azo Red A, Croceine AZ, Brilliant Scarlet, Rhodamine 13, Orange Extra, Orange ENZ, Indian Yellow G, Indian Yellow R, Tropacoline OO, Naphthaline Yellow, Alizarine Black 4B, Alizarine Black 6B, Naphthol Blue Black.

Thus by judiciously combining the diamine colors with these dye stuffs, shades can be dyed uniformly in one bath which cannot be produced only with diamine colors. The following method of dyeing is best applied. Charge the dye-bath with the requisite dye stuffs and Glauber's salt, boil up, shut off the steam, enter the goods and let run for one-half hour without steam, sample. If the shade of both wool and cotton is too light, add some more of the dyestuffs used for both

fibers, heat up once more and boil for one-fourth to one-half hour. If the wool only is too light or its shade different from that of the cotton add some of the dyestuffs used for shading the wool and bring again to the boil. If, however, the cotton turns out too light or does not correspond in shade to the wool, add some of the dyestuffs used for dyeing the cotton, without, however, raising the temperature. Prolonged boiling is necessary but very rarely, and generally only if the goods to be dyed are difficult to penetrate, or certain qualities of wool which only take up the dye stuff with some difficulty. In such cases dye stuffs are to be selected which go only on the wool and such which go only on the cotton, as, for instance, diamine colors of group II in combination with the corresponding wool dye stuffs used for shading; the goods can then be boiled severely for some time and perfect penetration and level shades will result. If the wool takes the dye stuffs too easily, as is frequently the case with goods manufactured from shoddy, and would therefore be dyed too dark a shade, then dye stuffs have to be used which principally dye the cotton, and too high a temperature is to be avoided. In such cases it is advisable to diminish the affinity of the wool by the addition of a small quantity of borax or soda. As the baths in which dark shades are dyed do not exhaust completely, it is advisable to preserve them for the sake of cheaper and quicker dyeing. This is more feasible, as deep staple shades, such as black, brown, dark blue, etc., are always in good demand. Such standing baths require an addition of one-fifth of the original quantity of Glauber's salt, and from three-quarters to four fifths of the dyestuffs added.

I Linings (Italian cloth, mohair, serge, etc.). For these goods the Diamine Colors are most extensively used. For blacks, Union Black S and Oxy-Diamine Black BM have yielded the best results. Both dye cotton and wool to the same shade and cover the cotton even better than the wool if not boiled too severely. The wool can easily be shaded by addition of Naphthol Blue Black or Formyl Violet, the cotton by adding Diamine Brown N or Diamine Fast Yellow A or B. A medium blue black requires as first addition from about 0.4 per cent. to 0.5 per cent. ($6\frac{1}{2}$ to 8 ounces per 100 pounds goods) Naphthol Blue Black, 0.3 to 0.4 per cent. ($4\frac{1}{2}$ to $6\frac{1}{2}$ ounces per 100 pounds goods), Formyl Violet S₄B and 1 per cent. (1 pound per 100 pounds goods) of Union Black S or Oxy-Diamine Black BM.

Naphthol Blue Black and Formyl Violet only tint the wool, which in nearly all cases is required to be of a blue cast, the slight addition of Union Black S for Oxy-Diamine Black BM, serves for saddening and for overcoming differences in shades which may arise in dyeing in standing kettles. Boil the goods with these additions for 20 to 30 minutes, then sample to determine whether the wool has obtained a sufficiently bright blue cast, if this is not the case add some more of each dyestuff and continue boiling 15 to 20 minutes. If the wool is not of the desired shade then stop boiling and add from $2\frac{1}{2}$ to 4 per cent. ($2\frac{1}{2}$ to 4 pounds per 100 pounds goods) Union Black S or Oxy-Diamine Black BM, and let run $\frac{1}{4}$ hour without further heating. A sample will then show whether it is necessary to shade the cotton to yellow or red by adding some Diamine Fast Yellow A or B or Diamine Brown M. If the wool is of the depth desired, but the cotton is too light or too blue, the latter is brought to a shade by a further addition of the black dyestuffs without further heating.

If the entire quantities of dyestuffs required have been added to the bath at the start, the wool in some qualities of goods, even if boiled only moderately, might become of too deep a shade. It is therefore advisable to proceed as described, which method has always given satisfactory results on a large scale. Either the goods are rinsed immediately after dyeing in cold water, or they are laid out in their full width until they are quite cooled off and then rinsed cold in a vat or in a "padding machine." It is of great advantage to adjust an easily acting squeezing apparatus for squeezing out the goods on lifting in order to prevent too great a loss of dyestuff.

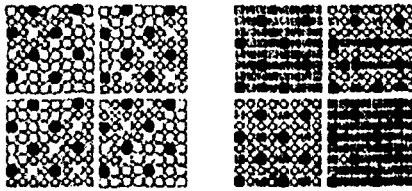
For subsequent lots the quantities of dyestuff and Glauber's salt mentioned are sufficient in standing baths, there is added to the dye vat the Formyl Violet and Naphthol Blue Black, the goods are then boiled and the operation proceeded with as described above. In order to render the dyed goods resistant to finishing manipulations an after treatment with copper sulphate or bichromate of potassium is applied, whereby the dye stuff is fixed on the cotton fiber.

Alongside of the dye vat and in the same direction a second vat with a winch is adjusted, which is charged with water of about 122° F., and 3 per cent bichromate of potassium and 0.1-0.2 per cent sulphuric acid reckoned upon the weight of the goods. Let the dyed goods after having slightly squeezed them out, run into this vat, chrome one half hour, let the chrome bath run off and fresh cold water run in, and rinse in this manner. Then subject the goods to the finishing process.

The cotton will not then suffer in shade, no matter whether the goods are singed, crabbed or steamed dry or moist. If the situation of the vats does not permit the chroming of the goods in this simple manner, they are taken from the dye vat and carried to the chrome vat and the goods are entered in the usual manner.

(To be continued.)

Textile Design



Design I.

Design II.

WEAVES WITH PLAIN CENTRE.—With the object of making a fine and wearable cloth and yet having a comparatively open effect on both sides, it is not unusual to arrange the weaves on principle illustrated in these designs. The effect in the first plan on both sides is that of a

$\frac{4}{4}$ twill. The soundness of the fabric, however, is increased by

the odd threads and even picks in the design, which make a plain cloth running through both the warp and weft portions of the weave. Any simple plan may be developed on this principle. Thus, in Design II.,

an ordinary $\frac{4}{4}$ mat cloth is produced, but again the plain

threads and picks have been inserted. This method of constructing plans makes it feasible to set finer than if what might be appropriately termed "strengthening" threads and picks or central texture were not used. The following are two sets of weaving particulars:—

(1) Warp and Weft.

2/60's, with 136 threads and 130 picks per inch.

(2) Warp and Weft.

2/48's, with 108 threads and picks per inch.

It is a useful method of constructing weaves for coatings, but is particularly applicable to regular weaves, such as mat and twills, and these composed of large floats of warp and weft.—Roberts Beaumont in the "Textile Recorder."

METAL IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the metal imports from Great Britain during February, 1897, 1898, and the two months to February, 1897, 1898:—

	Month of February.		Two months to February.	
	1897	1898.	1897.	1898.
Hardware and cutlery	£2,298	£1,669	£7,063	£3,305
Pig iron	55	1,348	435	1,852
Bar, etc.	965	1,212	2,201	1,497
Railroad	552	6,872	552	6,922
Hoops, sheets, etc.	1,771	1,957	3,611	2,784
Galvanized sheets	2,572	542	3,226	2,573
Tin plates	15,893	6,586	38,401	18,515
Cast, wrought, etc., iron	3,068	2,097	4,752	3,791
Old (for re-manufacture)	285	80	476	80
Steel	2,347	6,119	4,933	10,640
Lead	760	604	1,279	1,582
Tin, unwrought	1,451	967	4,497	1,389
Cement	625	1,389	1,093	1,907

LITERARY NOTES.

"The Counter" is a small monthly issued by the publishers of the "Dry Goods Economist," New York, which is issued in the interest of the retail dealers' assistants.

The April "Century" has a group of papers on the Pennsylvania coal regions. Henry Edward Rood tells of the supplanting of English speaking miners by foreigners from Austria-Hungary and Italy, his paper being entitled "A Polyglot Community." Jay Hambidge gives "An Artist's impressions of the Colliery Regions," mainly in the vicinity of Lattimer, where the recent rioting took place. Both of these articles are illustrated with many striking pictures by Mr. Hambidge. Under the general heading of "Coal is King," Edward Atkinson considers "The Advantages of England and the United States in the World's Commerce," and Edward W. Parker tells of "The Supply of Anthracite Coal in Pennsylvania." In "A Famous Sea Fight," Claude H. Wetmore describes the engagement between the Chilean and Peruvian ironclads off the coast of Bolivia in 1879, the paper being fully illustrated. In a supplemental article, Hon. Theodore Roosevelt, Assistant Secretary of the Navy, discusses "Fights Between Ironclads," with reference to their significance and priority. Privy Counsellor Dr. Slaby, of Charlottenburg, writes of "The New Telegraphy," describing recent experiments in telegraphy with sparks, and without the use of wires, which he conducted in the presence of the German Emperor. Elizabeth Robins Pennell tells of a delightful trip "Over the Alps on a Bicycle," Joseph Pennell furnishing many illustrations. Sara Y. Stevenson brings to a close her series of reminiscences of the French intervention in Mexico, with a graphic paper on "The Fall of Maximilian," telling of the last days and the execution of the emperor. R. Talbot Kelly, in an article entitled "An Artist Among the Fellaheen," describes, in a picturesque way, village life in Egypt. Many vivid pictures by Mr. Kelly accompany the paper. A series of articles on "The Seven Wonders of the World," by Prof. Benjamin Ide Wheeler, with full-page illustrations by Castaigne, is begun. This month Mr. Castaigne gives a remarkable reproduction of the Pharos of Alexandria. In the series of "Heroes of Peace," Gustave Kobbe writes of "Heroes of the Life-Saving Service." A six-page poem by Bret Harte, "Her Last Letter," being a reply to the well-known poem by this author, entitled "His Answer," is illustrated by C. M. Relyea. A further instalment of Dr. Mitchell's "Adventures of Francois," the conclusion of Mrs. Harrison's "Good Americans," a characteristic novel on Western life, "A 'Goodfellow's' Wife," by Hamlin Garland, and a Southern sketch, "A Challenge," by Richard Malcolm Johnston, comprise the fiction of the number. The frontispiece is Gilbert Stuart's portrait of Lady Erskine, engraved by Henry Wolf.

The "Witness" has announced a patriotic song competition, and offered fifty dollars as a prize to the winner. The terms of the competition are few and simple. The prizes will be: Fifty dollars for the best contribution; twenty-five dollars for the next best contribution, fifteen dollars for the next best contribution; ten dollars for the next best contribution. The judges will be recognized by all alike for their ability and integrity. They are: S. E. Dawson, Lit.D., Queen's Printer, Ottawa; Rev. J. Clark Murray, LL.D., Professor of Mental and Moral Philosophy, McGill University, Montreal; Rev. W. Clark, D.C.L., LL.D., Trinity University, Toronto. All songs must be sent through the post-office, full postage being prepaid, lest they fail of arrival. They should be addressed: "Editor Song Competition, 'The Witness,' Montreal." They must be mailed on or before April 30.

Wm. J. Matheson & Co., Limited, is now issuing a very interesting monthly of some ten pages, neatly covered in drawing paper and ornamented with a handsome design in dark brown. Several articles dealing with the dyestuffs handled by the firm are contained in the January issue.

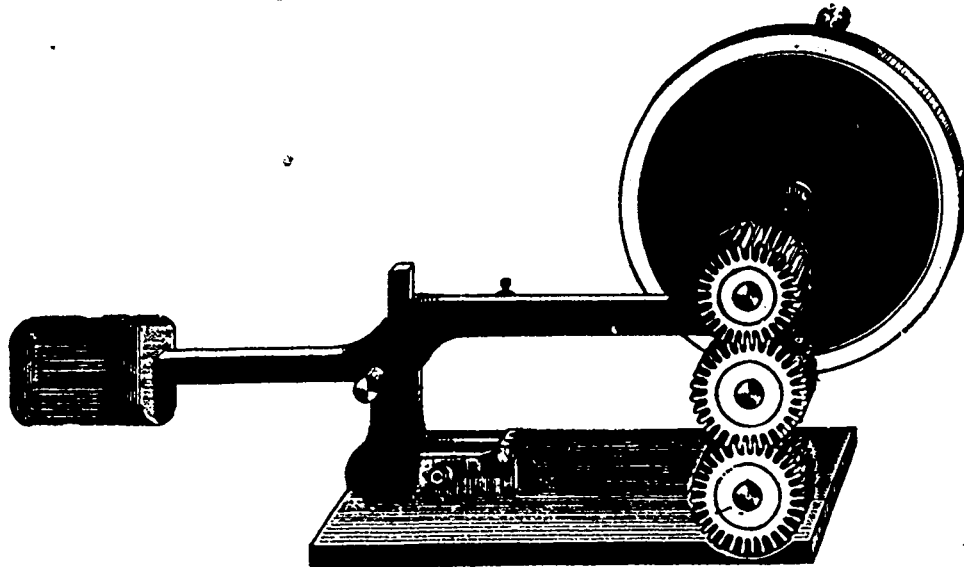
"The Year-Book for Colorists and Dyers" is a pocket-book of ready reference, presenting a review of the yearly advances in the bleaching, dyeing, printing and finishing of textiles, with quarterly supplements and colored samples. It is edited and published by Dr. Harwood Huntington and Dr. Ulrich Schoedler. Volume I. will comprehend the following features: First—New dyes and other dyers' materials, giving brief statement of their nature. Each dye will be

tested and reported upon, giving its stability to light, acids, alkalis, weather, etc. Dyed samples will be furnished in the quarterly supplements. Second—New processes, inventions and discoveries, with a succinct presentation of their commercial utility. Third—Tables of the most frequent application. Fourth—New books will be mentioned and estimates made of their value. Fifth—A glossary of all drugs and chemicals used in bleaching, dyeing and finishing establishments, their apt impurities, with quick methods for discovering adulterations and sophistications. Sixth—Summaries of analytical methods best adapted to color-work.

The Easter Number of the "Canadian Magazine" maintains the high level of that periodical's literary work. Rome during Holy week is a well-written description of that ancient city, at what is certainly the most interesting time in its year. There are also charming poems by A. B. de Mill, R. E. Kingsford and others. The editorial comments are as usual bright, and the criticisms of Canada's legislators there given are most apt.

SEWING MACHINES FOR BLEACHERS AND FINISHERS.

The improved sewing machine for bleachers and finishers here shown is for one, two, or three needles, for getting a flat even seam,



giving two thicknesses only in sewing. The maker is W. H. Harrap, Machinist, Engineer, Richmond Hill, Blackfriars Street, Manchester, England.

Foreign Textile Centres

MANCHESTER.—Although there is undoubtedly a steady home-trade business passing, a number of complaints are to be heard in various quarters. The umbrella trade is not satisfactory, and sellers of German umbrella cloths (silk and cotton mixtures) have felt the influence of the depression. The consumption of German umbrella silks is much larger than is that of French makes, and is probably in excess of all others combined. The goods may be obtained at as low a price as 8½d. per yard in one of the widths used in the trade—36, 40, or 44-inch. Locally the business is a very large one. Inquiries are now coming forward for parasol silks. In dress goods the run upon mercerised articles (of Bradford make) continues. These popular fabrics can now be obtained at lower rates than those current a short time ago, although dyers and finishers are still getting very remunerative prices for their work. Striped skirtings (Yorkshire and Scotch) are coming more to the front. Melton skirtings having previously received the principal share of attention. The goods now sold include a fair proportion of cotton warps. In the lace branches attention should be drawn to veilings with colored chenille spots

on black and white grounds. There is also a fair run on Fedoras, which are used for millinery purposes. There is reason to fear, however, that the new straws have hurt the millinery lace trade, and further injury has no doubt been inflicted by the use of crimped satins, pongees, and surahs for trimming purposes—principally the first-named. There have been good sales locally of cheap Nottingham gupures, but other articles of this class are quiet. Narrow Vals and combinations sell well, the latter being, I should say, one of the principal features just now. Speaking of sewing cottons, by the way, it is understood that the new combination formed in the United States is likely to work amicably with the English Sewing Cotton Company and the firms composing the Central Agency. I believe that Messrs. J. and P. Coats in past years have been desirous of bringing the outside American houses into line, but that failure has hitherto attended their efforts. The presence in the States of officials of the English Sewing Cotton Company at the time the American combination was being formed appears significant. A friend possessing an intimate acquaintance with the subject estimates that on their present output the members of the existing combinations would

require to make 12½ per cent. on their turnover to pay 5 per cent. dividend. As to what that turnover may be, opinions differ. Without taking into account the production of the mills abroad owned by British concerns, the latter may be credited with the exports of about three millions sterling from this country. Then there is the home trade, which was put some time ago at a million—a figure which seems absurdly low. The silk spinning combination talked of recently referred to firms utilizing waste silk only, Lister & Co. being the leading concern in this branch. The profits to the mills engaged in the trade have for years been as high as 5 per cent. This statement is made on the authority of a very large producer. The scheme, in any case, has fallen through, the London promoters who came up North with it being unprepared to fall in with the ideas of a well-known spinner who, voicing the opinion of many of his fellows, said, "We'll sell if you'll give us the brass." The proposition was to pay producers by shares in the new company. A proposition to combine the Leek wavy silk trade has also been met with disfavour.

BRADFORD.—The strong tone which was evident at the opening of the London wool sales has been fully sustained up to the closing day, and the competition for special lots of very fine merino wool has been exceedingly keen from all quarters, except from the American section, who have recently been kept quiet by the disturbing nature of the recent news as to the foreign relations of the United States. At the present time it would be quite impossible to place in this market at a

profit the wool bought at the London sales either in the form of tops yarn or piece goods, in fact, the further one gets away from the raw material the more unsatisfactory would be the transaction as it is impossible to obtain anything like a proportionate advance for any class of manufactured goods as compared to the increased cost of raw material. Of course this condition of affairs cannot last for long, and failing any serious political combination, prices all round must gradually level themselves up, and both spinners and manufacturers, if they accept orders will be compelled to have better prices. The wool market in Bradford has not shown any special improvement, but there are distinct signs that as soon as greater confidence is established, consumers will be prepared to supply their wants more freely especially in the finer qualities of colonial wool. In English wools of a non lustrous kind prices are barely firm but a fair business continues to be done in the best pure lustre wools and the stocks here of those are now getting low. This special demand for pure lustre wool is accounted for by the fact that these wools are now being largely used in the production of fancy dress goods of quite a different character to the old style of bright lustre fabrics. In raw material and in yarns the prices of both alpaca and mohair continue extremely firm, and with the fact before us that braids continue fashionable, and that new methods of introducing mohair effectively into dress goods are being every day evolved, it seems hardly possible that any falling off in the price of mohair can come about. The ordinary worsted yarn trade is far from good, the only yarns in demand being the special kinds previously referred to. Perhaps the demand for two-fold worsted yarns for the Continent is the very worst part of the trade. There is a distinct improvement in the dress goods trade for the home markets as the season advances, and some makers of fancy goods are very much pushed to get their repeat orders through in time to catch the spring season's trade. Fancy coloured Jacquard effects in mercerised goods are doing well, in addition to the very handsome styles of black mercerised mohairs, which have been in high favour for some time past. A large business has been done in various kinds of fancy checks, both in Bradford goods proper and in cottons of the fancy zephyr order, and I have not known the check looms of this district so busy for years. The dress goods trade for the coming autumn has also opened out well, and the best Bradford makers of fancy costume cloth have probably captured a larger proportion of the orders for the home trade than for some seasons past, even in face of the very keen competition of the foreigners. Makers of costume coatings tell me that they are selling their cloths well both in mixture and plain colours, and they believe that the purity of the material and finish of Bradford made goods has established them permanently in favour of ladies, who value fabrics unaffected by any kind of weather and of great durability.

KIDDERMINSTER.—Considerable activity characterizes the carpet trade. The deliveries just before Easter are usually very large, and the consignments have been quite up to the average. As pointed out recently many orders now received are for urgent delivery. This of itself gives an apparent briskness to the trade, for in order to complete these orders overtime in many cases has to be resorted to. But apart from these pressing demands on the part of consumers there is a steady general trade which keeps looms going. Spinners also report increased activity. As manufacturers receive particulars, demands on the spinners are made. The growing firmness of the wool market strengthens the position of spinners with regard to prices. Still it is difficult to secure much business on a profitable basis. The outside markets provide spindles with a good deal of work.

NOTTINGHAM.—The display of fancy cotton millinery lace is varied, and buying is brisk. Valenciennes are most in favour in the best centers of fashion in Europe and America. Old valenciennes, dentelle floche, vieille malines valenciennes,

maille ronde, point de burano, and application bruxelles are all more or less apparent, and vie with Oriental lace for the precedence. Imitation torchons and maltese in linen and cotton are in request for special markets. A few orders for silk laces have been placed in anticipation of the Easter trade. On the whole, however, this celebration has not given rise to as much purchasing as usual in previous seasons. Orders for American, crochet and warp laces are rather scarce. A few specialties of cotton embroidery trimming have, on the other hand, sold freely. Silk veilings are doing more business both in plain and fancy goods. Novelties are sought after, as the competition in current goods is too keen to allow of adequate profits. Plain branches are as busy as ever, and machinery, here as well as that in Derbyshire and the West of England, finds full employment, orders being still in arrear. The export demand is well maintained; besides the requirements for embroidery purposes special lines are equally in request for millinery purposes at home and abroad. Manufacturers obtain their own prices, as the demand is considerably ahead of the supply. Curtains and window blinds for the home trade and for export are doing a large turnover, but prices are run so low that there is much machinery which cannot find profitable employment. Still there is a large aggregate of sales, including the goods coming from Scotland and elsewhere. Last month was a very indifferent one for hosiery manufacturers of this center, and March has not shown much improvement. Special qualities of merino and cashmere stockings and vests are in good request and prices are firm with an upward tendency. Some moderate orders have been placed for fancy half-hose and there is a limited business doing in natural wool vests and combinations. Nearly all branches of the trade, however, are depressed. The distributing markets speak of a falling off in the demand for fancy embroidered hose, but there is a certain inquiry for fine malines used in the millinery trade. The demand is, however, slackening. The inquiry for Chantilly is still maintained, but there is not such a rush for the goods as formerly. Travelers are booking larger orders and the warehouses generally are busier. There is not much doing with the South American States in cotton hosiery. The establishment of direct steamers to Brazil has helped the import trade in hosiery greatly. There has been a considerable movement during the week in cotton hosiery, but prices are very low.

LEICESTER.—Yarn shows less depression and there is more disposition to buy at current rates. Merino, cashmere, and lambswools are firm with more inquiry, but cotton yarns are dull. Hosiery improves slowly, and the orders for delivery are still unsatisfactory. Choice fabrics in delicate shades sell freely, but medium plain descriptions are very slow of sale. There is more business passing in specialties and fancy goods. Elastic webs firm, with a good demand for home and export.

SOUTH OF SCOTLAND.—Tweed manufacturers in the South of Scotland continue to be fairly well employed. There is a feeling, however, that the improvement will not be permanent. Rates are very low, and in many cases quite unremunerative. Wool and yarns are firm in price, and an advance in the price of cloth will soon be imperative. It is confidently expected that as a result of the small crop and extra demand, wool will undergo a further appreciation. The Glasgow retail trade has not been particularly busy recently, owing to the extremely cold and wintry weather. The atmospheric conditions were most unseasonable, being much too late to have any influence on the fur and woollen trades. All the houses are displaying their new goods.

BELFAST.—Trade has been up to a fair average amount. Steadiness rules the various branches and the outlook is hopeful. The stoppage of one of our spinners has if anything helped matters on, as it is a standing lesson of the effect of wretched competition. We trust we are within measurable

distance of a stable market and fair profits. Sales this week have perhaps not been as good as those of previous ones. Manufacturers continue the hand to mouth buying, and prices, while unaltered, have hardly been tested. Brown-power and hand-loom linens show no appreciable change. Union goods are selling freely, damasks being particularly active. Tow goods are meeting with a slow sale. Cloths for dyeing and hollandes are going quietly into consumption, but there is a trifle more doing in handkerchiefs. Hand-loom goods unaltered in demand or price. Bleached linens for home account are gradually going off in increasing quantity. Sales figure out to a very decent amount. Export trade is better. Reports from the West Indies are more encouraging and orders more respectable. United States demand continues to grow and with Canada business is quite satisfactory. Taken all over, our market has rather more than maintained its position. Once the spinning amalgamation is in fair way of being carried through we quite believe it will at once stiffen things up all round.

LYONS.—The situation in the Lyons mills has not undergone any change. Looms are still busy, but orders placed for Spring goods are nearly completed, and repeats, which generally arrive during February and March, have not arrived in expected numbers, so that, generally speaking the result of the season is disappointing. There is no fear of an unfavourable turn in the industry; the pressing demand for goods has ceased, and the hand looms in town, which produce the fine grades in high-class novelties, are no longer busy; but the hand looms in the country and the power-loom factories have sufficient work. The sale of low-priced goods continues quite satisfactory, but novelties are less sought, and Autumn ordering is delayed beyond expectation. No signs, however, are visible that silks will be less favored by fashion. The opinion obtains that during next season business will be as brisk as it was last year. Paris is particularly backward with its purchases and orders, while from London several buyers have been here lately. Their purchases, however, were mostly cheap novelties from stock and plain goods. As to Fall orders, they appeared undecided. An active demand has existed only for plain taffetas in black and colors, mousselines and gauzes, in plain and broche and wool-filled crystallines. The demand for checked satins is no longer as active, while serges, polonaises and Austrias held their own. Plain silks were neglected, but plaids and checks are much sought. Damasse is losing in favor; especially were cheap cotton-mixed grades more quiet. Regarding the outlook for next season, opinions differ greatly, but little doubt exists that the fashion for silks will be of considerable duration. With reference to near-future styles, indications seem to point to a continuation of taffetas, small effects in striped armures, small broches, plisses, and, as a new direction, an increased use of epingles in plain and fancy textures. A clearer idea of more striking novelties may be formed after the Easter holidays. In the velvet trade an increasing activity is noticed. More Fall orders have arrived lately, but the result is not what had been expected. It appears that in nearly all the fashion centers the ordering season will be unusually protracted, and buyers everywhere enter upon Fall ordering with marked hesitancy. Orders for fancy velvets are more numerous, and the outlook for velvets seems brighter. The ribbon trade is good. The consumption of these fabrics has assumed much larger proportions than anticipated. In rich, fancy ribbons there is an increasing demand. A feature of the present season is the use of extremely wide ribbons in elaborate styles, which have a very liberal outlet.

CREFELD.—There is a slight decrease in the demand for silks. Orders are not coming in as fast, but no unfavorable effect is noticed in the activity of mills. The wholesale trade has been very satisfactory, and stocks are small. It is, there-

fore expected that the demand will become more pressing as soon as Spring weather gives an increased stimulus to trade. Retail stores are well supplied with goods, and an active demand cannot be expected from them for some little time. General trade conditions, however, remain very promising. Few orders, mostly in plain staple goods, have been placed for the fall season. Uncertainty still exists as to fancy styles. It is not expected that the ordering season for these will develop before several weeks. There are no features in styles to be reported. Taffetas in plain, glace and quadrille still lead, and promise to remain in favor during the coming season. Damasses and moires also continue among the favorites. The cloak trade has placed some orders for styles intended for next fall. From these, it appears that fancy silks for outside materials of cloaks are considered less desirable than last year. Orders for summer silks show a growing tendency for bayadere and barre effects. The outlook for the velvet trade has considerably brightened lately. Orders of considerable size have been received from abroad, which will enable mills to keep looms running through the season. Prices are not as good as might be wished, but no complaints are heard, and, generally manufacturers are pleased over the brighter prospects. The demand for velours du Nord has, however, entirely ceased. Fancy velvets have been ordered rather freely, mostly in cheap grades in 48 centimetres wide. These fabrics promised to be very fashionable for millinery and dry goods purposes, and really handsome styles have been produced. Large designs are rarely met with, the tendency appearing to be for small velvet effects on colored grounds in either barre or haitienne combinations.

ZURICH.—The Zurich raw silk market remains quiet. Mills are sufficiently provided with raw materials, having made liberal contracts some time ago. As fall ordering remains without animation, there is no inducement for them to make renewed purchases. Lower grades of silk are beginning to feel the effect of this lull; prices for these are no longer as firm, but so far only slight concessions can be obtained. Best grades, on account of their scarcity, are kept at the highest figures. There is, however, no change in the sentiment of the market, and the opinion prevails that the highest level will be reached as soon as the cause for the present hesitancy has disappeared. Trade in manufactured goods is not as brisk as expected, and wholesale houses particularly feel disappointed. Even fancy taffetas no longer experience the good demand of a few weeks ago, and buyers seem inclined to await the result of the spring season before placing orders for a later period. Few contracts run beyond the end of May. Mill activity, however, shows no diminution, and they hope to be able to continue work to the full extent without intermission. New styles for next season have been prepared, and a satisfactory ordering business is anticipated, as no signs indicate a falling off in the demand for silk goods.

CHEMNITZ.—In fancy hosiery there is a growing demand for light-colored styles. Even white ground is chosen a good deal. Plaids are only bought in high-priced goods, while for the lower-end styles striped all over are selected mostly. Black boots are called for very little; but fancy boots and black tops are selling fairly well. Trade in fleeced hosiery is much better than it has been this season. In cashmere hosiery quite an improvement is also felt. In cashmere fine gauges have the most call, as the light weight of the goods means a big saving in import duties. Trade in staple goods has not changed much. Prices are rather firm, and no important reduction of quotations is expected for the coming season. Fancy hosiery is advancing in price, and even at the higher prices manufacturers will not be able entirely to satisfy their customers, and deliveries will again be delayed in the fall. Large back orders have yet to be filled before manufacturers can start on the new orders which are coming in every day. For children's wear ribbed goods are selling better than flat

styles, and a good demand exists for striped and plaid styles for early deliveries. The glove business is very satisfactory, and the season promises to be a good one. Button gloves form a good portion of the orders placed. For misses' gloves, dark tan shades, seals and navy are bought quite freely, while for ladies' wear the bulk of the orders is for black.

Among the Mills

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

The D. K. McLaren Belting Co., Montreal and Toronto, has opened a branch office in Galt, Ont.

The Penman Mfg. Co. is working its Paris, Ont., factories night and day on Klondyke orders.

C. P. Greirson, the new superintendent of the Hawthorne Woolen Mills, Carleton Place, Ont., assumed the duties of his new position, April 1st.

The Minerva Mfg. Co., Toronto, states that it will not remove to St. Therese, Que., in spite of the large bonus which has been voted by that town.

The binder twine factory at the Kingston penitentiary is running daily, between thirty and forty convicts being engaged in the manufacture of the twine.

The recent high water in the St. Lawrence caused the temporary closing down of the Hochelaga Cotton Mills. The fires in the boiler room were drowned out.

Mr. Dodds has retired from the firm of Moorehouse, Dodds & Co., woolen manufacturers, Glen Tay, and the business is being conducted by Mr. Moorehouse.

The reports concerning damage done to Jacob Cluthe & Co.'s shoddy and batting mills at Doon, Ont., by the recent flood are, we are assured by the company, fictitious. The mill was not damaged by the overflow.

We have heard with regret of the death on the 7th inst., at his late residence, 98 St. Famille Street, Montreal, of David S. R. Bremner, manufacturers' agent. Mr. Bremner was 59 years of age.

The officers of the Elmira Board of Trade for the year are: Pres., Dr. H. Ulyot; vice-pres., Geo. Klinck; sec., Albert K. Dunke; treas., Charles Shierholtz; council, J. P. Luckhart, Daniel Ratz, M. L. Weber, N. Hillary, A. Werner, S. Lashingier and J. S. Weichel.

The estimates submitted to Parliament for the coming year provide for the increase of \$60,000 over this year for clothing for the Canadian militia. This will be good news for the woolen mills, as all, or nearly all, of this extra amount will be spent among our own factories.

St. Hyacinthe is shortly to have a new industry. The proprietors of the Eastern Townships' Corset Factory have decided to engage in the manufacture of white shirts. Forty or fifty men will at first be employed, and should the sales justify it the number will be greatly increased before long.

A. B. Code, ex-M.P.P. for South Lanark, died in Ottawa recently. He was born in the township of Lanark 68 years ago, and for many years he operated a woolen mill at Innisville, and afterwards at Carleton Place. He was South Lanark's representative in the Local Legislature from 1869 to 1879, and eighteen years ago was appointed by the Dominion Government to the position of inspector of weights and measures. He was an uncle of ex-Mayor T. A. Code, of Perth, the well-known woolen manufacturer. A large family is left to mourn his loss.

D. W. Shirrefs, late of the Hawthorne Woolen Mills Carleton Place, Ont., has removed with his family to Oswego Falls, N.Y.

Thomas Costello, traveler for Boyd, Caldwell & Co., Lanark, Ont., has gone to Victoria, B.C., to extend the territory of his firm.

J. McGowan is building a large dam between Fergus and Elora, Ont., where he intends to put up a large oil mill to utilize the flaxseed produced in that section.

The Markham, Ont., Woolen Mills are being opened again under the name of the Maple Leaf Woolen Mills. F. A. Clary is to be manager and W. F. Latimer, superintendent.

The late W. H. Storey, Acton, Ont., left life insurance aggregating \$53,000. Of this sum \$30,000 goes to his son, W. A. Storey, who will manage the glove manufacturing business.

James Kendry, M.P., manager of the Auburn Woolen Mills, Peterboro, has been elected first vice-president of the Canadian Manufacturer's Association, which held its annual meeting this month.

The managers of the Dominion Cotton Mills, Brantford, Ont., are asking the city for a bonus of \$30,000. It is to give in return possession of the Wincey mill property, for which the company has no use at present.

The Dominion Cotton Mills Co. is asking Kingston, Ont., for a \$50,000 bonus. They run 290 looms and use 20,000 pounds of cotton a week, but claim that unless they enlarge their business they must close down.

At the annual meeting of the Dominion Cotton Mills Co., held April 4th, the following directors were elected: A. F. Gault, president; Jacques Grenier, vice-president; S. H. Ewing, Hon. J. O. Villeneuve, C. E. Gault, Samuel Finley and Charles R. Whitehead.

The Montreal Cotton Co. is to build a large spinning mill, and is looking for a site with a bonus. Huntingdon, Que., Alexandria, Ont., and a number of other towns are anxious to secure it. Valleyfield, Que., the present site of the company's works, has lost the chance of the new mill as its treatment of the company was not liberal.

At the annual meeting of the Canadian Manufacturers' Association this month a resolution of condolence with the family of the late W. H. Storey, glove manufacturer of Acton, Ont., was passed. Mr. Storey was one year president of the association, and always took great interest in its affairs.

The Merchant's Cotton Company, of St. Henri, Montreal, have had a meeting of the shareholders, at which it was voted to increase the capital by \$100,000. This addition of capital will be devoted to the erection of a third extension to the mill. The new addition will contain spinning and weaving machinery, which will be devoted to the same lines of goods as the company is now manufacturing. This addition will increase the annual output of the mill from \$1,000,000 to about \$1,300,000, and will be ready for operation next November.

The Eclipse Mfg. Co., of Ottawa, of which Edward Seybold, for many years connected with the wholesale dry goods trade in that city, is manager, have recently started the manufacture of metal bar buttons. These buttons are made on a new principle by a special machine, which is so automatic in its action that all the operator does is to feed a large sheet of metal into the machine and the buttons come out on the other side, perfected, at the rate of more than one per second. Two or three of these machines were set to work experimentally and samples were sent to the trade. E. W. Mudge & Co., of Montreal, were appointed selling agents and so rapidly have the buttons gained favor that they were unable to fill the orders received although six more machines are now being built to increase the output.

It is said that the flax mill at Alma, Ont., will be permanently closed this month.

Alex. Hope, manager of the Paton Mfg. Co., Sherbrooke, Que., is leaving for the old country.

Chas. King & Sons have asked a loan of \$15,000 from Whitby Ont., in order to reopen Whitby tannery.

The Berlin, Ont., Brush Co., is now conducted by Oliver S. Martin and E. Kirsch, J. B. Betzner having retired.

The Consumers' Cordage Co., Brantford, Ont., has reopened its factory, which had been closed since August last.

There is some talk of forming the Port Elgin Woolen Company into a joint stock company with a capital stock of \$25,000.

The Carleton Place, Ont., woolen mills are now running on summer time, long hours for five days and half a holiday on Saturdays.

The officers of the Waterloo Board of Trade are: President, Simon Snyder; vice-president, Dr. J. H. Webb; secretary, A. B. McBride.

A. J. Kimmel, salesman for the Berlin, Ont., felt boot works, has returned from a trip to the North-West, where he sold \$30,000 worth of goods. The factory is working overtime.

The Canadian Oil Cloth Company, which is moving to Toronto from Port Hope, Ont., has taken out a permit for a \$14,000 factory, to be erected on King Street, near the subway.

Armstrong McCormack, Kingston, Ont., says he will organize a syndicate to build a cotton mill, and would subscribe to the enterprise, if the city would vote \$50,000 as a bonus.

John Reid, Almonte, Ont., has removed with his family to Garden Hill, Durham County, Ont., where he has rented a woolen mill. Mr. Reid is a brother of Geo. Reid, of the well known mill supplies firm of that name in Toronto.

The purchase of the Dominion Carpet Factory, Elora, by a number of Galt business men, was completed April 9th. The deal was made, however, with the understanding that a legal bylaw would be passed giving the company a building free of rent for twenty years, no taxation, and free water.

P. Clarke, J. Harris, F. C. Johnston, W. C. Bonnell, and J. A. McGee, Toronto; Elizabeth Harris, Hamilton, have been incorporated as The Yukon Fur Manufacturing Company of Toronto, Limited, to manufacture and deal in fur goods and clothing, and to acquire the business in Toronto of James Harris, with a capital stock of \$20,000.

A. H. Royce, E. P. McNeill, E. J. Gollop, Toronto; J. C. Smith, Toronto Junction; P. A. Bell, Cleveland, Ohio, have been incorporated as the Clothes-Pressing Company of Toronto, Limited, to dye, cleanse, renovate and press wearing apparel and woolen and linen goods, and to manufacture and sell clothing, with a capital stock of \$2,000.

The Tilsonburg, Ont., Woolen Mills, owned by D. Tilson & Co., of that place, were on April 8th bought by Mayor Rumpel, of Berlin. Arrangements have been completed whereby the mills, which have all along been in operation, will at once be stripped of their machinery, which will be shipped to Berlin, where the greater portion of it will be utilized in Mr. Rumpel's factory.

The well-known firm of Chas. Boeckh & Sons, manufacturers of brushes, brooms and woodenware, Toronto, has been dissolved, and is to be succeeded by the new firm of Boeckh Bros. & Company, composed of E. C. Boeckh and C. Boeckh, junior, who will continue the business on the same lines and under their personal management. Charles Boeckh, sen., who retires, established himself in Toronto in 1856, since which time the business has been carried on without interruption, and the goods turned out by the firm are known from the Atlantic to the Pacific.

A Dominion charter is asked for the Hudson's Bay Knitting Co., capital \$50,000. The applicants are, J. J. Westgate, C. L. Higgins, B. W. Higgins, H. E. Higgins and Robt. Lucas.

Isaie Trudeau, foreman of the Dominion Oil Cloth Company, Montreal, died recently at the age of 60 years. He was employed by the same company for twenty-five years, and was greatly esteemed by the workmen.

The Royal Carpet Co., Guelph, Ont., have engaged Robt. Chambers, of Toronto, as their eastern representative. He has been with the Robt. Simpson Co., as assistant manager and manager of their carpet department for 13 years.

The R. W. English Linseed Oil Refining Company has been recently established on Grey Nun Street, Montreal. The increased production of oil is of great interest to the textile interests of Canada, as it will materially increase the output of flax.

There was a small fire at the Oxford Woolen Mills, Oxford, N.S., about 5 o'clock, just after the mills had closed for the day, smoke was seen issuing from the wool-storing room. The door leading to the room was broken open and the wool speedily removed. The fire was checked before much damage was done. It is supposed that the fire was caused by the steam pipes over-heating the wool.

Fire destroyed the window-shade factory of Geo. H. Hees, Son & Co., Toronto, recently. The firm are making energetic arrangements for rebuilding. Meanwhile they have taken, as a temporary factory, the premises on McMurrich Street, formerly occupied by the Warren Organ Company, and have already turned out newly-made goods thence. It is fortunate that the company had their warehouse down town, apart from the factory.

An Ontario charter has been granted to T. W. Hastings, J. R. Shuttleworth, S. Stewart, Ellen Hastings and Martha H. Shuttleworth, London, Ont., as The Hastings Hat and Cap Manufacturing Company of London, Limited, to manufacture, buy and sell hats and caps, and to acquire the business at present carried on by T. W. Hastings, under the name of "The Hastings Hat and Cap Manufacturing Company," with a total capital stock of \$25,000.

T. W. A. Lindsay, W. Creighton, Montreal; H. C. Monk, W. Arnold, C. H. Carriere, A. W. E. Hellyer, Ottawa, have applied for incorporation as the Canada Clothing Company, Limited, to carry on in Ottawa and elsewhere the business of manufacturers and dealers in clothing, suitings, shirts and underwear, including all kinds of silk, linen, tweeds and woolen goods, wares and merchandise generally or usually sold in the dry goods business, and to deal in and manufacture all kinds of goods, wares and merchandise, including dry goods, stationery, etc.

A bill to incorporate the Alex. Gibson Railway and Manufacturing Company, has been passed by the New Brunswick Legislature. Col. McLean while in England arranged a loan of two millions at 5 per cent. for Gibson, and the Act is to give authority to issue debentures for that amount secured on the entire Gibson property. This property embraces the timber limits of 200,000 acres on the Nashwaak, town of Marysville, cotton and lumber mills and the Canada Eastern Railway. These properties are valued at seven millions and capital stock to that amount will be issued to Mr. Gibson. The loan will be a mortgage on the property of Mr. Gibson, and will enable him to discharge his liabilities and leave a working capital of half a million; exclusive of the railway. Mr. Gibson's sales of lumber and cotton last year amounted to two millions, and he paid out at Marysville half a million for wages. His disbursements at St. John, loading sixty vessels with lumber and the labor bills of the Canada Eastern swell this to \$700,000. The incorporation sought is the largest ever asked in New Brunswick.

The boiler in C J Miller's tannery at Orillia, Ont., exploded April 13th, shaking the whole town. No one was hurt.

W. R. Allen, late of the British American Dyeing Co., Montreal, has succeeded the late J. D. Allen as manager of the chemical department, for Jack & Robertson, manufacturers of dyestuffs and chemicals, Montreal. Like his late brother, Mr. Allen is a gold medalist of the city and guilds of London institute, and gold medalist of the Yorkshire College, Leeds. They being the first who have taken such honors outside of Great Britain.

The Central Prison, Toronto, whose twine factory has suffered from fire so severely this year, is to have better fire protection, and a large water tank is being built in the prison grounds. The tank, which is to have a capacity of 300,000 gallons, will be entirely under ground. It is to be lined and roofed with brick and the roof will be two feet under the level of the lawn. When it is finished and the lawn is leveled off there will be nothing to show that the tank exists. A pumping engine is to be put in with a capacity of 1,000 gallons a minute. The tank will be fed with water from the three wells on the prison premises, the rain water from the roofs of the buildings and the condensed steam from the engines. In this way the inspector anticipates that \$1,500 a year, now paid to the city for water, will be saved.

There was a meeting of business men in the office of the Fraser Knitting Mill, Almonte, Ont., recently when "The Anchor Knitting Company of Almonte, Limited," was duly constituted. The following representing over \$25,000 of the subscribed capital were present, viz.: H. K. Pinhey, Geo. R. Lyon, Ottawa; Robt. Bowie, Brockville; F. Barrette, A. Bisson, J. Lemieux, Hull, Que.; H. Colton, Robt. Russell, J. G. Forgie, J. E. Whelan, Pembroke, Geo. F. Francis, A. J. McAdam, Jos. Ainley, L. H. Lemoine, T. R. White, H. W. Lundy, F. Scantlion, and W. P. McEwen, Almonte. The following were chosen as directors: Pres., H. K. Pinhey; vice-pres., A. J. McAdam; sec.-treas., H. W. Lundy, L. H. Lemoine and Jos. Ainley; A. M. Greig was appointed solicitor. By-laws were adopted and arrangements were made for carrying on the manufacturing of knitted underwear and hosiery on a considerable scale.

The Allen Manufacturing Co., has decided to remain in Toronto, the city having granted it the following privileges. Permission to bridge over and tunnel under lane in rear of the present building, exemption from taxation on all plant and machinery, stationary assessment for the next ten years, water at six cents per thousand gallons. The principal lines which will be manufactured in future are, Ladies and children's sewed white cotton underwear, ladies' and children's flannellette underwear, infants' robes and underwear, infants' and children's headwear, infants' and children's knitted underwear, blouses and shirtwaists, costumes, wrappers, dress skirts, collars and cuffs. Two years ago the present factory, which now occupies Nos. 103, 105 and 107 Simcoe Street, having a frontage on Simcoe Street of 100 feet with a depth of 84 feet, five stories high and situated on the corner of Pearl Street, was added to. The firm which has now acquired property covered by nine houses on the corner of Pearl Street immediately in rear of the present building, will at once erect another factory communicating with the present buildings by bridge, across

the lane. The new additional building will have a frontage of 167 feet by a depth of 84 feet, five stories high and will be built to correspond with the present building. It is expected to open the new building on the 1st of October next.

We understand that Walter Scrimger, who was born here and has lived here all his life, being the centre and soul of Almonte's musical activities for years, is about to sever his connection with the Rosamond Woolen Company with the intention of taking another situation, and some of his musical friends have undertaken the getting up of a concert as a mark of honor to one who has done so much to develop talent along the above lines, and who has always done a great deal more than his share in helping along entertainments in aid of any deserving institution. The date selected is April 21st, and the programme will be unusually rich in new and attractive features. We predict a record-breaking attendance for so deserving an object.—Almonte Gazette.

The following paragraph referring to a cotton mill which was not named, appeared in a recent issue of The Montreal Witness: "A very important meeting of District Assembly 18, Knights of Labor, took place in their hall, 652½ Craig Street. H. Gravel, D.M.W., occupied the chair. The semi-annual report of the general organizer showed that altogether eighteen new assemblies had been organized and two lapsed locals reorganized during the past six months. A very animated discussion took place on a report from Local Assembly 210, composed of employees of a certain cotton company. It was stated that they worked from twelve to fourteen hours a day for very small wages and that children under age and young girls were compelled to work until nine o'clock at night without supper. It was also stated that a system of fines existed that was becoming unbearable. The report went on to say that the factory laws were not carried out by any means and that the factory inspectors failed to do their duty for reasons that were unaccountable. After the reading of the report was completed the discussion became general and it was feared for a time that a strike would be ordered forthwith, for the purpose, as some of the more radical members expressed it, of showing to the public the intolerable state of affairs that existed in that institution. But better counsels prevailed and the matter was referred to the executive board to be attended to without delay."

Immediately after the bell tolled for quitting work at the Hawthorne Woolen Co.'s mill one evening a short time ago the employees assembled in the large cloth room adjoining the office, and sent a messenger in for A. M. Morrison, the retiring superintendent. On entering the cloth room Mr. Morrison was surprised at the large assembly before him, and inquired their mission. Then Geo. Ashman, overseer of the dyeing department, and W. H. Matthews, overseer of the finishing room, came forward, and Mr. Ashman read the following address: "A. M. Morrison. Dear Friend:—We prefer to use this familiar term in preference to the more formal appellation of sir, because you have endeared yourself to us since coming among us that we could not express our sentiments

The Publishers of the "Canadian Journal of Fabrics" will give one year's subscription FREE to the first three subscribers who forward to the Toronto office, 62 Church Street, perfect copies of the issue of January, 1897.

Wool Washers

Dryers and Carbonizers

KITSON

MACHINE CO.

LOWELL, MASS.

correctly did we use any other term. We have heard with unfeigned regret of your intention to leave us at the end of the month, and avail ourselves of this occasion to express in some degree, the esteem with which we regard you in your official capacity, and our admiration of your private character. During the time in which you have superintended the affairs of this mill, each one of us, from the hobbin boy up, have had reason to remember your many acts of kindness; you have given us gentle counsel and encouragement in the performance of our duties, and in this way have taught us a lesson of faithfulness in our departments which has made us your friends. But we would not confine our gratitude to mere words. With this chain which we ask you to accept as a parting gift, we hope to form an attachment which will link your memory to us when you are toiling in other fields, and may you long be spared to wear it near your kind and noble heart. Our blessing goes with you, and in your new home, wherever it may be, we hope you will find time to think of those with whom you have labored so harmoniously in the Hawthorne Mills of Carleton Place. Signed on behalf of the operatives, Geo. Ashman, W. H. Matthews, Geo. Rumbelow, Wm. Ashman, Geo. Morrison, Wm. Rodgers, Carleton Place, March 26th, 1898." Mr. Matthews made the presentation, and at the close of the reading the recipient of the gift could scarcely find words to express his feelings. He acknowledged his feelings of gratitude for the token of esteem, expressed the sorrow he felt in removing from Carleton Place, and wished all a full measure of success in their respective spheres. The watch chain is a very handsome one of solid gold, the locket is also of gold, and bears Mr. Morrison's monogram on one side, and on the opposite side is engraved the time and occasion of the gift.

ENGLAND'S PRINTED CALICOES.

Considerable comment is often made as to the remarkable variety in pattern which the British manufacturer of printed goods is in a position to offer the trade. The key to the situation lies in the enormous output of goods. An interesting summary and analysis of the official figures relating to printed calicoes is supplied by a correspondent of The Manchester Guardian. From this it appears that in 1896 England printed for export alone 1,072,848,800 yards, equal to 35,761,720 pieces of 30 yards, giving an average production for each machine in the trade of 39,735 pieces per annum, or 794 pieces per week for each machine. The price comes out for cloth and printing 2 37-64d. In 1897 there were printed for the same markets 876,797,200 yards, equal to 29,226,573 pieces of 30 yards, an average of 32,474 pieces per annum, or 649 pieces per week for each machine. The price comes out at 2 19-32d., a difference in favor of 1897, but there is a less quantity per

machine. Assuming 10 per cent. as the minimum production for the home trade, the net result would be for 1896 1,186,130,680 yards, or say 43,708 pieces of 30 yards per annum, or 874 pieces per week for every machine in the trade. For 1897 the net production would be 964,476,920 yards or 36,388 pieces per machine per annum, or say 727 pieces per week. These and similar goods are sent all over the world, to Turkey, Bombay, Brazil, Australasia, Bengal, Burmah, Germany, Holland, Belgium, France, Portugal, Italy, Austria and many other countries. It will readily be seen from this what Canadian manufacturers mean when they talk of the ruinous competition of British textile manufacturers.

THE WOOL MARKET.

Montreal.—Some good sized lots of Cape wools have been sold at 15½ to 16¼ cents, and the demand is good, although the manufacturers complain they must get an advance on their manufactured stocks, as fine wools are at least 10 to 15 per cent. higher. Within a month they must either close down or get the advance. Wool stocks in manufacturers' hands are mostly small and a good many of them are not using much wool—cheap goods seem to be wanted by the trade. All merino wools are higher by 10 per cent.; coarse wools show no change and the tone of the market rather in the buyer's favor.

Toronto.—As yet there is practically no fleece wool on the market and will not be till end of next month. There are a few parcels of unwashed fleece breeders' wool, which are selling at 10 or 11 cents. There is a fair demand from the mills, which are all busy, but what seems to be wanted is low grade wools. It is expected on the street that the new clip will be opened at a very low price.

FABRIC ITEMS.

The creditors of Paquette & Michaud, dry goods, Montreal, have refused an offer of 50 cents on the dollar, and the estate will be wound up. Total liabilities are \$56,500, of which \$24,000 are preferred, against assets of \$28,000, showing a deficit of \$27,500.

In connection with the winding up of the estate of the London departmental store of Rumans & Butler, Mr. Rumans has issued writ for damages against A. O. Bucham as assignee. It is claimed by Mr. Rumans that he was sold the stock at the creditors' meeting for a sum which would pay 70 cents on the dollar. This was afterwards, he says, forced to 71 cents, when the stock was disposed of to Rumans, Grey & Carrie. Mr. Rumans seeks compensation for alleged damages and to restrain from paying to the creditors a dividend of 71 cents.

The Royal Electric Co. MONTREAL TORONTO

CANADIAN MANUFACTURERS OF THE

S. K. C. TWO-PHASE APPARATUS

Alternating Current Generators Alternating Current Motors
Alternating Current Arc Lamps

Served from the same circuit

S. K. C. TRANSFORMERS

Correspondence solicited for all kinds of Electric Installations.

The W. E. Sanford Co., of Hamilton, has received the contract from the Dominion Government for the supply of military clothing for the next three years.

A satisfactory offer not having been made the stock of Taylor & Co., dry goods, Kingston, was sold last week by auction at 50 cents on the dollar. The stock was valued at \$12,972.

The Geo. Craig & Co. departmental store, of Winnipeg, is no more. The business is now carried on by S. Craig, trading as Geo. Craig & Co., but the stock consists of dry goods, millinery, clothing and furs only.

The Master-in-Ordinary has appointed E. J. Henderson as permanent liquidator of the Army and Navy Clothing Co., in bonds of \$15,000. Edward Still, William McKenzie, Nicholas Garland, Wellington Francis and George Kerr, representing \$80,000 of the \$100,000 claims, were appointed an Advisory Committee.

James W. Mickleborough has been admitted as a partner in the business of wholesale woollens and tailors' trimmings, heretofore carried on at 22 Front Street west, Toronto, under the name and style of John Muldrew & Company. The name of the firm will henceforth be Mickleborough, Muldrew & Company.

At the opening of the London fur sales the prices, compared with the sales last March, showed the following favorable results: Silver fox advanced 25 per cent., marten 7½ per cent., red fox 17½ per cent., and white fox 25 per cent. Otter declined 2½ per cent. and fisher 10 per cent. Mink showed a considerable advance.

The annual meeting of the Merchant Tailors' Association, Montreal, was held recently in the library of the Natural History Society, the president, W. St. Pierre, in the chair. Satisfactory reports from the treasurer and secretary having been received, the election of officers for this year resulted as follows: President, Wm. Paterson; vice-president, Lachlan Gibb; hon. treas., R. Desjardins; hon. sec., F. W. Richards.

The executors of the late Oliver Thibaudeau, dry goods merchant, Lauzon, Que., who died in February, have made

an assignment of the estate. He was formerly of the firm of Isidore Thibaudeau & Co., wholesale dry goods, Montreal and on the closing of that business, opened in the retail line at Lauzon, in 1894. The assets are estimated at about \$12,000, and general liabilities a similar amount; the widow has also a dower claim of \$3,000.

The Lancaster Machine Works is calling attention in this issue to the announcement of the sale of a felt manufacturing plant. The factory is reported to be in good order and includes picker, cards and cloth press.

The London Times, referring to the resolution passed at the annual meeting of the Canadian Manufacturers' Association to the effect that the Dominion Government be urged to obtain reciprocal concessions from Great Britain in return for the recent preferential privileges, says it sounds more like a joke than the serious consensus of opinion of men of business.

CHEMICALS AND DYESTUFFS.

The following are current quotations in Montreal in the chemical and dyestuffs market:—

Bleaching powder	\$ 2 00	to \$ 2 10
Bicarb. soda	2 05	" 2 10
Sal soda	0 70	" 0 75
Carbolic acid, 1 lb. bottles	0 35	" 0 37
Caustic soda, 60°	1 75	" 1 80
Caustic soda, 70°	2 25	" 2 35
Chlorate of potash	0 12	" 0 15
Alum	1 35	" 1 50
Copperas	0 70	" 0 75
Sulphur flour	1 75	" 2 00
Sulphur roll	1 75	" 2 00
Sulphate of copper	4 50	" 5 00
White sugar of lead	0 07	" 0 08
Bich. potash	0 09	" 0 10
Sumac, Sicily, per ton	50 00	" 55 00
Soda ash, 48° to 58°	1 25	" 1 50
Chip logwood	1 90	" 2 00
Castor oil	0 09½	" 0 10
Cocoonut oil	0 06½	" 0 07

AGENCY WANTED.

A responsible firm of manufacturers' agents in St. Johns will be glad to hear of two or three leading manufacturers in the textile and kindred trades who wish to be represented in Newfoundland. Address S. & S., care of Canadian Journal of Fabrics, 62 Church Street, Toronto.

ESTABLISHED 1859
THE C. TURNBULL CO.,
OF GALT, Limited.

MANUFACTURERS OF

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

THOMAS KER

J. HARCOURT

KER & HARCOURT,

ESTABLISHED 1857



MANUFACTURERS.

Orders by Mail will receive prompt attention.

Walkerton, Ont.

A. KLIPSTEIN & CO.

122 PEARL STREET, NEW YORK.

Chemicals & Dyestuffs

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

HEADQUARTERS FOR

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

WRIGHT & DALLYN, Agents, Hamilton, Ont.

FOR SALE

A FELT MANUFACTURING PLANT

Picker, Cards, Felter, Fulling Mill, Cloth Press.

All in good order—will be sold en bloc or singly.

Lancaster Machine Werks, 113 Oak Street, Lancaster, Ont.

See that all your
LINEN THREAD
 and . . .
SHOE THREAD
 carries
 this Trade Mark



IT IS
 ALWAYS
 RELIABLE

THOS. SAMUEL & SON, SOLE AGENTS

8 St. Helen Street, Montreal
 22 Wellington Street West, Toronto
 473 St. Valler Street, Quebec

FULL STOCK CARRIED AT EACH ADDRESS

FINISHER—who is an expert fuller is open for a change; has family of workers. A very valuable man for medium sized mill, or would accept second hand in first-class mill. Address "D," care of Canadian Journal of Fabrics.

Situation Wanted.

WANTED, situation by an **ENGLISH DYER**; an all round hand; used to all the new colors and latest improvements. Willing to come to Canada to fill a permanent position. Address,

"J. D.,"

Care of CANADIAN JOURNAL OF FABRICS.

DICK, RIDOUT & CO'Y

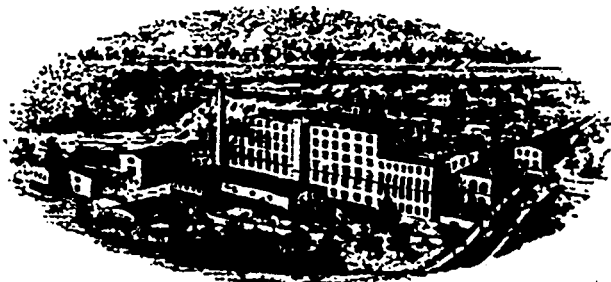
TORONTO, ONT.

Manufacturers of

Jute and Cotton Bags
 Horse Blankets, Hessians, Buckrams
 Tailors' Canvas
 Hop-Sacking, Binder Twine, Yarns, Etc.

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

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

Richard Schofield, Toronto

Manufacturer of all kinds of

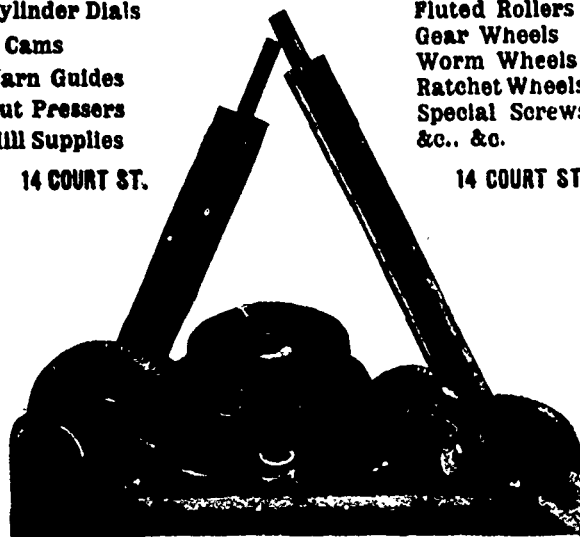
Power Knitting Machines

Cylinder Dials
 Cams
 Yarn Guides
 Cut Pressers
 Mill Supplies

Fluted Rollers
 Gear Wheels
 Worm Wheels
 Ratchet Wheels
 Special Screws
 &c. &c.

14 COURT ST.

14 COURT ST

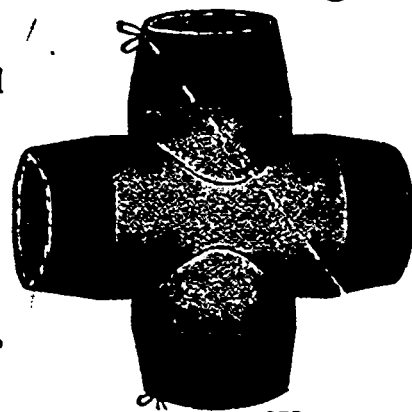


Ontario agent for the well-known **Union Special Sewing Machine** for plain and ornamental stitching, as used in the manufacture of shoes, gloves, underwear, etc. **14 Court Street.**

... MICA ...

Boiler Coverings!

All Steam
 Users should
 See the
 New Mica
 Boiler and
 Pipe
 Covering



It is Flexible, Durable
 and a Magnificent
 Non-Conductor
 ...of Heat...

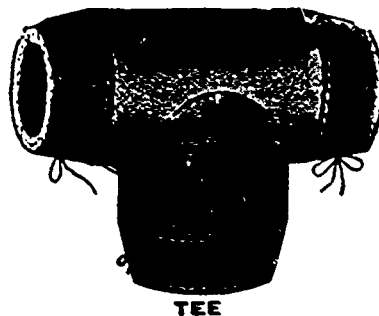
CROSS CLOSED.

Tested by Mechanical Experts of the Canadian Pacific Railway Co., Grand Trunk Railway Co., Michigan Central Railway Co., Boiler Inspection Insurance Co., and proved to be the **Best of all Non-Conductors.**

Full particulars, reports of trials, prices, testimonials, &c., &c., from

Mica Boiler Covering Co.
 LIMITED.

9 Jordan Street
 TORONTO



TEE

ROOT, BENN & CO'Y

Wool and Noil Merchants
Combers
and Top Makers

Cable Address—
Honta,
Bradford.

BRADFORD, ENG.

**Australian, Cape and
B. A. Wools
Tops, Noils, Wastes**

AGENT:

R. S. FRASER

3 ST. HELEN ST., MONTREAL

YOUR ENGINEER OUGHT TO HAVE A COPY!!

The Manual of Lubrication,

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

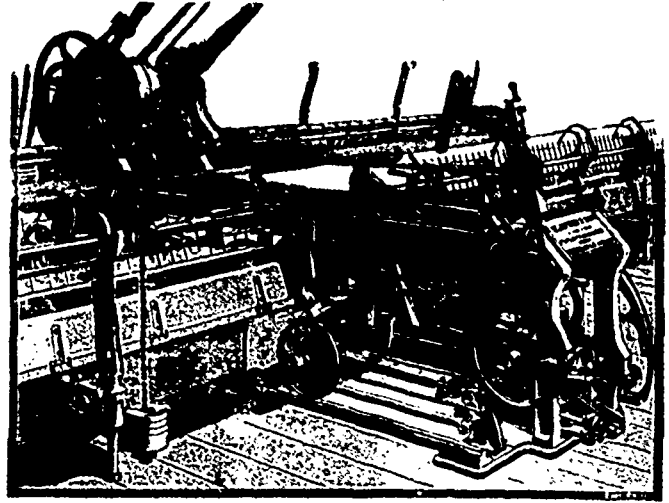
With Methods of Determining the Purity and other Properties of Oils, etc.
By Louis SIMPSON.

Price \$1.00
Post paid

Address **BIGGAR, SAMUEL & CO.,**
Fraser Bldg., MONTREAL, Can.

WILLIAM WHITELY & SONS, Limited

LOCKWOOD, HUDDERSFIELD, ENGLAND.



Winding Machinery, Improved Self-Acting Mule, Suspended Steam Driven Centrifugal Hydro-Extractor, Tentoring and Drying Machines, Patent Wool and Cotton Dryer, Patent Wool Scouring Machine, Cross Raising Machine, Patent Crabbing and Winding-on Machine, Warp Sizing, Cool Air Drying and Beaming Machine, and other Woollen Machinery.

CATALOGUE ON APPLICATION

SHAW BROTHERS, - Agents

164 McGill Street, - Montreal.

Have You Forgotten

**TO SEND YOUR
REPORT FOR THE
NEW "CANADIAN
TEXTILE
DIRECTORY?"**

It costs you nothing, and will be to your advantage.

If you do not report, do not complain if your name and business are incorrectly given, or, possibly, omitted.

The following is the information required in the various branches of trade —

Woolen Mills, Cotton Mills, Carpet and other Factories where Weaving is done: Name and address of Proprietors, and names of the Officers, if a joint stock company; the capacity in sets of cards, looms and spindles (in the case of knitting mills, the number of knitting machines, and whether hand or power machines); when established, whether water, steam or electric power; description of goods manufactured, whether the mill has a dye house, and names of selling agents, if any. When situated in cities, the street address is desired.

Carding or Fulling Mills: Name, address, capacity, date established, and whether steam, water or electric power

Cordage and Twine, Jute and Flax Mills: Name, address, date established, capacity, steam, water or electric power, kind of goods made and material used (whether cotton, hemp, flax, etc.) selling agents, if any

Sail, Tent and Awning Factories; Upholstery, Wall Paper and Window Shade Factories; Rubber, Oil Clothing, Felt, and Miscellaneous Factories in Textile Fabrics: Name, address, date established; steam, water or electric power; description of goods made; and selling agents, if any

Clothing, Glove and Mitt, Collar and Cuff, Suspender and other Factories in Men's Furnishings; Button Factories; Corset and Ladies' Wear Factories: The same as in preceding list, adding, whether selling through agents, or to the trade direct, or whether manufacturing for custom work only.

Hat Factories: Name, address; date established, steam, water or electric power; whether manufacturing Wood Felt, Fur Felt, Silk, Cloth or Straw Hats; and whether selling to the wholesale or retail trade

Fur Manufacturers: Name; address; kind of goods manufactured, and whether selling to the wholesale or retail trade.

Bleachers, Dyers and Feather Dressers: Name; address; whether Job Dyers, etc., of garments only, or feathers, etc.

Laundries: Name, address; and state whether a machinery or hand laundry.

Paper and Pulp Mills: Name; address. Officers, if a stock company; capacity, in tons per 24 hours; date established; steam, water or electric power; number and capacity of engines and cylinders; kind of paper manufactured; selling agents, if any.

Manufacturers' Agents or Commission Merchants: Name and address, and in what branch of the Textile trade (whether Woolens, Cottons, Hats, Furs, Carpets, etc)

Wholesale Dealers: Name, address and line of business; specifying whether dealing in any or all of the following branches: Dry Goods, Clothing, Men's Furnishings, Tailors' Trimmings, Carpets, Upholstery Goods, Hats, Furs, Millinery and Ladies' Wear. In case you manufacture Fabrics also, state in what lines

ADDRESS **BIGGAR, SAMUEL & CO., PUBLISHERS**

FRASER BUILDING, MONTREAL, CANADA

A remarkable fire took place recently in a dry goods store Montreal. The sun's rays were caught at an angle by the truck window glass and focussing direct on a display of silk set it on fire with the result that about \$1,500 damage was done, chiefly by smoke.

The following officers were elected at the regular annual meeting of the Silk Association of America, held March 22nd, 1898: Albert Tilt, president; Catholina Lambert, first vice-president; William Strange, second vice-president; Jacques Huber, third vice-president; Franklin Allen, secretary; Charles J. Homer, treasurer; directors, John N. Stearns, William T. Kyle, William Skinner, M. M. Belding, Joseph Loth, A. G. Jennings, Jacob Weidman, W. E. Eaton, James M. Erskine, Geo. L. Montgomery, Jerome C. Read, C. L. Auger, Dwight

Ashley, John H. Hopper, H. W. Boettger, Frank W. Cheney, and B. A. Armstrong.

Fiber from the pineapple leaf will eventually take a prominent place among the constituents of textile fabric, according to statements made in the report of the United States Department of Agriculture. The report shows that both the wild and the cultivated plants of this description yield fiber, which when spun, surpass in point of strength, fineness, and lustre those obtained from flax. Summarizing its value, mention is made of its usefulness as a substitute for silk, and as a material for mixing with wool or cotton—useful, too, for cordage, sewing silk or twist, laces, etc. Samples cleaned, without washing, when twisted to the size of binding twine, have shown a breakage strain of 150 pounds.

Dominion Cotton Mills Company

Whites, greys, ducks, cantons, drills, bags, grey sheetings, bleached sheetings, pillows, towels, piques, yarns, prints, etc.

Wholesale Trade Only Supplied
.....*Montreal, Que.*

CANADA GARNETT CO.



MANUFACTURERS OF
Garnetted Wastes and Shoddies
Waste Openers and Pullers
Office, 3 St. Helen Street
Works, to Bannockburn Avenue, MONTREAL

KLONDIKE NOTICE.

JAS. W. WOODS,

OTTAWA

CANADIAN GOVERNMENT **Klondike Outfitter**
AND MANUFACTURER OF
LUMBERMEN'S SUPPLIES

We will send a representative from head factory with complete set of samples to intending parties wishing to purchase their outfits. All information re prices, etc., gladly given on application to our Ottawa office. Our lines include all that is needed to ensure comfort with least possible weight, and buying from us you save the retailers' profit.
NOTICE—Messrs. Wreyford & Co. (Dr. Jaeger) 85 King St. West, Toronto, are not any longer our agents.

JAS. W. WOODS, OTTAWA

Loom Picker Co.

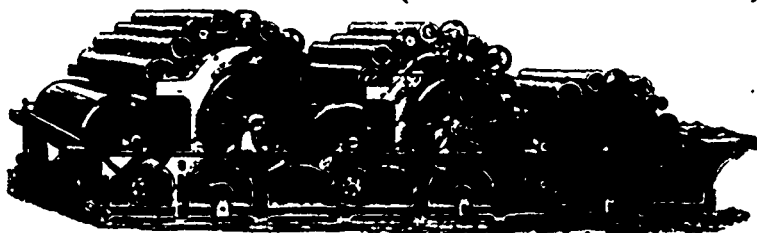
BIDDEFORD, ME.

MANUFACTURERS
... OF ...

Loom Pickers & Loom Harnesses

OF SUPERIOR QUALITY

TEXTILE MACHINERY (New and Second Hand)



English Sales Attended.

CARD CLOTHING TETLOW'S

Stock in Canada

Condenser Aprons Buffed Surfaces Plain & Grooved
Oak-Tanned and White Belting
Cotton Banding, Rim Spindle and Braided
Shuttles, Pickers, Heddles, Harness
Patent Frames, GENERAL FURNISHINGS

ROBT. S. FRASER

3 ST. HELEN ST., MONTREAL

ROTHSCHILD BROS. & CO.

Manufacturers, Manufacturers' Agents and Importers

BUTTONS.

Sole Agents for the American Continent



Sole Agents for the American Continent

Offices—466 & 468 Broadway, N.Y.
28 Rue de la Victoire, Paris, France.
11 & 13 Front St. East, Toronto.

Sherbrooke Yarn Mills Co.

MANUFACTURERS OF

KNITTING and FINGERING Wool Yarns
In Imitation Worsted.

Write for Prices and Samples
Sherbrooke Yarn Mills Co.
Sherbrooke, Que.

ROBERT & COMPANY

Manufacturers' Agent,

Woolen & Cotton Mill Supplies

14 St. Michael's, - MONTREAL, Que

The R. Forbes Co.

(Limited)

Manufacturers of

WOOLEN AND WORSTED YARNS

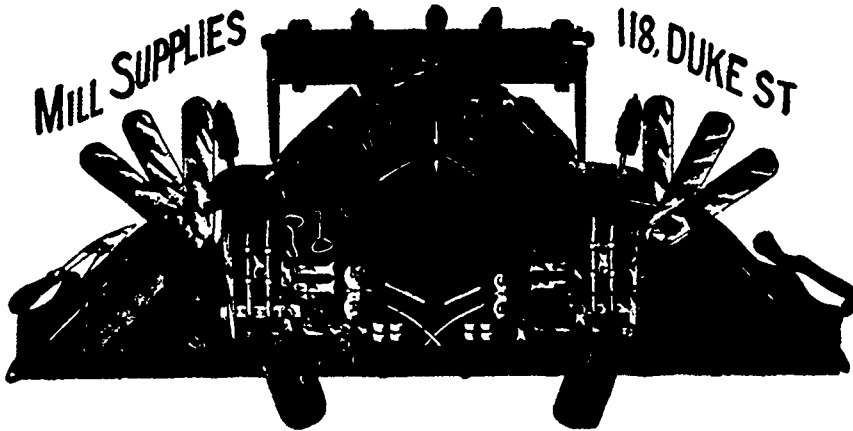
For Hosiery and other work

HESPELER, ONT.



GEORGE REID & COMPANY

SUCCESSORS TO PAUL FRIND WOOLEN MACHINERY CO., Limited



WOOLEN MACHINERY

Cards, Mules, Looms, Pickers, etc. All kinds for sale

WOOLEN MILL SUPPLIES

Every description kept in stock.

WOOL

Sole Agents for FRANCIS WILLEY & CO., Bradford, Eng. A large stock always on hand

BEAM WARPS

Sole Agents for HAMILTON COTTON CO.

MILLS FOR SALE

CARD CLOTHING

Our MR. REID is Sole Agent for Messrs. Samuel Law & Sons, Cleckheaton, Eng. and has always a large stock on hand.

MILL AND WAREHOUSE SUPPLIES

We keep in stock a full line of

- Specking Pencils
- Tweed Crayons
- Holdfast Tickets
- String Tickets
- Pin Tickets
- Gum Tickets
- Brass Paper Fasteners (a large variety) in small packages or in bulk—and make a specialty of
- Pattern Cases,
- Price Tickets, etc.

Special quotations to large consumers. Mail Orders promptly attended to.

MORTON, PHILLIPS & CO.

Stationers, Blank Book Makers and Printers

1755 & 1757 Notre Dame St., Montreal

G. B. FRASER,

3 Wellington Street East
TORONTO

REPRESENTING

- Miller Bros. & Co., Montreal; Paper and Celluloid Collars, Cuffs and Shirt Bosoms.
- W. D. VanEgmond, Seaforth Woolen Mill, Etobicoke, Friezes and Tweeds.
- Wm. Clark & Son, West Flamboro; Druggets, Tweeds, &c.
- Chamberlin, Donner & Co., Bradford, England Dress Goods, &c
- Peter Besenbruch & Co., Elberfeld, Germany; Buttons, &c.
- Merrimack Print Mfg Co., Lowell, Mass
- Burton Bros. & Co., New York; Linings, &c.
- H. T. Lamkin & Co., Cotton Brokers, Vicksburg; Mississippi Long Staple Cotton a specialty

E. W. MUDGE & CO.

5 St. Peter St. - Montreal.

TRIMMINGS

—FOR—

Knitting Mills and Woolen Mills

TYING-UP RIBBONS.

Pink & White Cotton Tapes

COP TUBES
Cones, Shells,
WORSTED TUBES,
Conical Tubes,
MAILING TUBES,
Haworth & Watson, Lowell, Mass.

CHAS. F. TAYLOR

Successor to Burgess Cop Tube Co.

Manufacturer of
PATENT MACHINE

PAPER COP TUBES

48 Custom House St.

**PROVIDENCE, R. I.
U. S. A.**

The Montreal Blanket Co.

Manufacturers of

**Shoddies, Wool Extracts
and Upholstering Flocks**

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

JOHN HALLAM,

83 & 85 Front St. East, - - - Toronto
and
88 Princess Street, - - - - - Winnipeg
Wholesale Dealer in

DOMESTIC AND FOREIGN WOOLS
Sumac, Japonica, &c.

LONG & BISBY

DEALERS IN
Foreign and Domestic

WOOL AND COTTON

GENERAL COMMISSION MERCHANTS
HAMILTON, ONT.

W O O L .

A. T. PATERSON & CO.

MERCHANTS,

35 Francois Xavier St., Montreal.
REPRESENTED BY MR DAVID GUTHRIE.

THE SMITH WOOLSTOCK CO.

Manufacturers and Dealers in all Lines of
Wool Stock, Shoddies, &c., Graded Woolen
Rags, Carbonizing and Neutralizing.

Best prices paid for Wool Pickings, Woolen
and Cotton Rags, Metals, &c. Hard Waste, &c.,
purchased or worked up and returned.

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

ROBT. S. FRASER

Wools, Cottons, Noils, Yarns

Specialties:

English Pick Lambs and Downs
Foreign Wools and Noils
Egyptian and Peruvian Cottons
Fancy Yarns

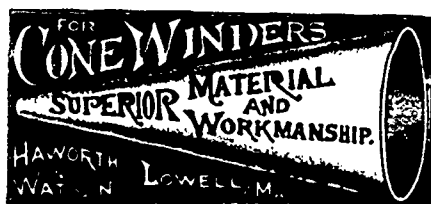
3 St. Helen St., MONTREAL

WM. D. CAMERON,

Woolen & Cotton Manufacturers'
Agent,

HALIFAX, N.S., & ST. JOHN, N.B.

Address P.O. Box 401. - HALIFAX, N.S.

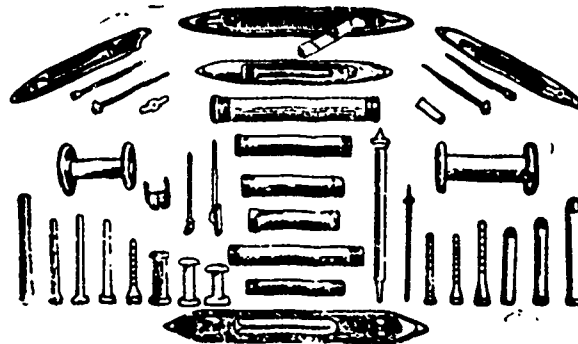


HETHERINGTON & ANDERSON,

YORK HOUSE, King St., NOTTINGHAM, ENGLAND.

KNITTING MACHINES. Shirt, Pant and Rib Top Machinery, Lock-stitch
(two threads) Seaming Machines, Machines for Crochet and Embroidery
Work. SPECIAL AND LATEST CONSTRUCTION.

Lachute Shuttle and Bobbin Works



We are the largest Shuttle
Manufacturers in Canada.

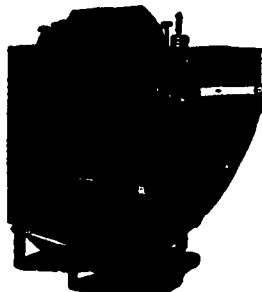
Slubbing, Roving and all kinds
of Bobbins and Spools for
Cotton and Woolen Mills.

We have always on hand
a large stock of
Thoroughly Seasoned
Lumber.

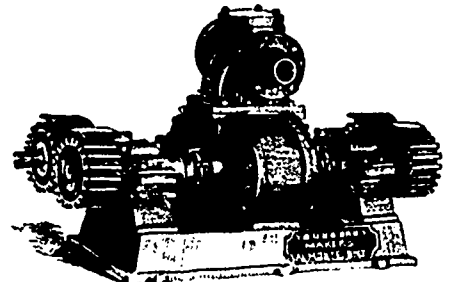
Orders solicited and all work guar-
anteed to give satisfaction.

JOHN HOPE & CO.
LACHUTE, P.Q.

MISSISSIPPI IRON WORKS



ESTABLISHED
1876



Manufacturers of English or American Fulling Mills and Washers, Wool Pickers, Ex-
haust Fan Driers, Dusters, Rotary Force Pumps for Fire Duty, Roller Feed Pumps,
Shafting, Hangers, Castings, Pulleys, Gearing, Forgings.
Full equipment of mills of every kind. **YOUNG BROS.,** Almonte, Ont.

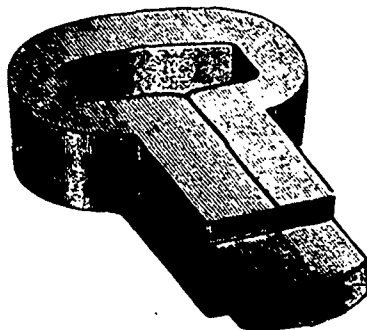
WILLIAM CRABB & CO.

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, Special
Springs, Loom and Shuttle Springs, English Cast-Steel Wire, Cotton Banding and General Mill Furnishings.

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



JOHN W. BARLOW

Manufacturer of

LOOM PICKERS,

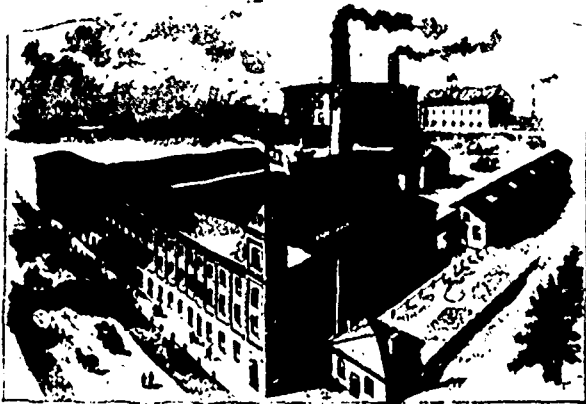
LAWRENCE, MASS.

This cut represents Barlow's Pat. Bow Picker
with solid interlocking foot. Pat. Feb. 26, 1888

Hamilton Cotton Co., Hamilton

MANUFACTURERS OF

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



SELLING AGENTS:

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

Agent for Warps GEO. BEID, 115 Duke Street, TORONTO

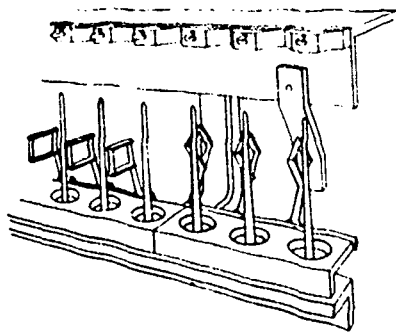
DEROCHIE BROTHERS, Cornwall, Ont.

We build

NAPPING MACHINES

up to 80 inches wide, to nap one or two pieces in width. The machine naps cotton or woolen goods, can either furnish folders or winding attachments, this machine is so geared that the changing of small gears changes the nap on cloth that is needed. The main shaft is 3 1/2 in. in diameter. All Roller Bearings are bronze and self-oiling. All Rolls are made of hydraulic piping—and every part of the machine is first-class in every respect.

Some of the machines are running at Canada Mills, Cornwall, Montreal Cotton Co's Mills, Valleyfield, Wm Parks & Sons, St. Johns, Dominion Cotton Mills, Halifax.



ANYTHING IN COTTON MILL MACHINERY WE ARE PREPARED TO QUOTE FOR.

This style of Spinning Frame Separators is the surest and best.

Lancaster. Machine Works,

113 OAK STREET,

LANCASTER - - ONTARIO



A Better Gift

Could not be given to the old folks than a copy of "The Anecdotal Life of Sir John Macdonald." It is at once the most interesting biography and the best collection of his jokes, repartees and witty sayings ever published. As one of the reviewers put it, "it is a biography, joke book, history and anecdote book all combined in one." Price, \$2.00 post-paid.

Address **Biggar, Samuel & Co.,**

67 Church St., Toronto, or Fraser Bldg. Montreal.

SOME QUESTIONS

THE first edition of the **Canadian Textile Directory** was published in 1885, and made a work of 318 pages. It has since grown till it has made a volume of 486 pages, and the coming edition will probably be larger still. Some new features will now be added, and every pains will be taken to make it comprehensive and correct.

Taking it all round, there is no work published containing the amount and variety of information on the textile and allied trades that will be found in the **Canadian Textile Directory**; and the number of copies ordered from abroad for purposes of reference is continually increasing, the last edition having been exhausted some time since by such calls.

The advertisers who patronize it, are, as a rule, the very best in the trade, and the number of the firms represented in its advertising pages has increased with every issue.

If you have not reported your name and address, please do so.

For forms and particulars, address

BIGGAR, SAMUEL & CO., Publishers

Fraser Building, Montreal, Canada.

Have you a Cotton Mill, Woolen Mill, Knitting Factory, Carpet Factory, Carding Mill, Silk Mill, Flax Mill, Jute Factory, Felt Factory, Rubber Factory, Cordage Factory, Asbestos Factory, Paper Mill, or Wall Paper Factory?

Are you a Manufacturer of Clothing Men's Furnishings, Ladies' Wear, Buttons, Feathers, Upholstery Goods, Sails, Tents, Awnings or Window Shades?

Are you a Manufacturer of Hats or Furs?

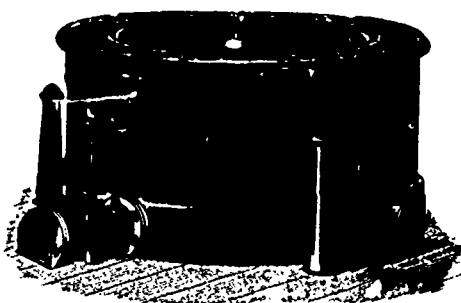
Are you a Manufacturers Agent or Commission Merchant in any of the above lines?

Are you a Wholesale or Retail dealer in Dry Goods, Clothing, Men's Furnishings, Hats and Furs, Millinery and Ladies' Wear, or Upholstery Goods?

Do you want to refer to details of the Tariff on Textiles, or to statistics of all branches of these trades and their relations with other countries?

if so, you need this Book and you ought to be in it.

BROADBENT'S HYDRO EXTRACTORS



Direct Steam Driven. No Shafts or Belting required.
Suspended on Links and requiring no Foundation.

Adapted for Manufactories, Dyehouses, Laundries,
Chemical Works, Sugar Refineries, etc., etc.

—SEND FOR CATALOGUE—

Thomas Broadbent & Sons, Limited

CENTRAL IRON WORKS

HUDDERSFIELD, - - - ENGLAND

Telegrams: "BROADBENT, HUDDERSFIELD."

Agents for Canada: - - SHAW BROTHERS, 164 McGill Street, Montreal.

Tele grams -Coop-Knit.

A B C Code used

A Revolution in Colors

THE STURGESS DESIGNER MACHINE

For making hand-knit Hosiery, Golf and Cycling Hose, Gents' Fine Socks, Ladies' Fancy Hose and Gloves.

Real Plaid and Tartan Patterns in 2, 3 or 4 colors, automatically produced at 30 pence per dozen—used to cost 30/ per dozen.

The production of this machine is equal to five times the amount of any other machine on the market, and the goods are seamless and perfect in pattern at that.

Manufacturers can design their own patterns without further expense

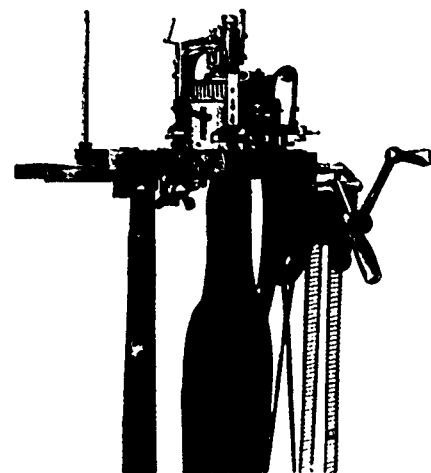
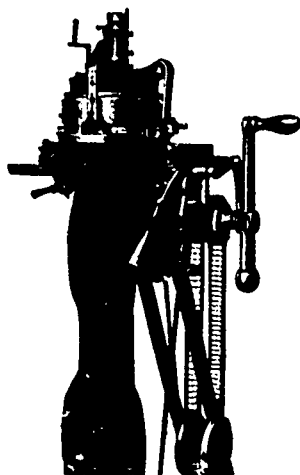
Write for particulars.

Co-Op. Knit Machine Co.

MILLSTONE LANE

G. F. STURGESS, Manager

LEICESTER, ENG



STEAM AND POWER

Pumps

& HYDRAULIC MACHINERY

FOR ALL DUTIES

NORTHEY
—CO., LIMITED.

TORONTO, ONT

LAURIE ENGINE CO.

Sole Agents for Quebec

St Catherine St., MONTREAL

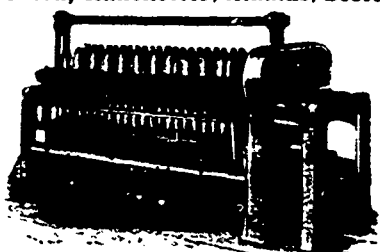
Brooks and Doxey

Manchester, England

Makers of Cotton, Cotton Waste and Woolen Machinery

Telegrams:

Union, Manchester, Athlins, Boston



WE have a complete set of our latest Cotton Machinery at work in our Show Rooms at 161 Pearl Street, Boston, and our agents, MESSRS W L HAINES & COMPANY, will always be glad to see buyers and to explain the various valuable improvements embodied in the machines. Our machinery is made of best materials only, particular care being paid to the finish of the various parts, and is constructed very substantially so as to withstand the highest speeds, and give the greatest production combined with best quality of work.

D. K. McLAREN, VICTORIA SQUARE

MANUFACTURER AND MILL FURNISHER

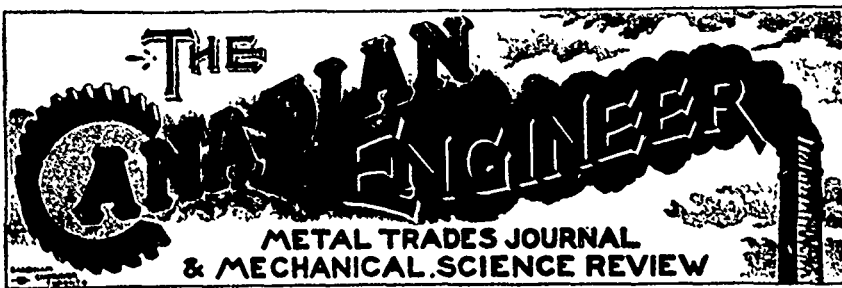
MONTREAL * OTTAWA * GALT

Genuine Oak Tanned Leather Belting

Lancashire Hair Belting

English Card Clothing

Western Trade—Please note our stock depot at GALT, ONTARIO, is now open, and our MR R M W. McLAREN will be pleased to answer any enquiries, also to fill orders.



ISSUED MONTHLY IN THE INTERESTS OF THE

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

The increase in its circulation is remarkable, as is shown by the following detailed statement confirmed by the affidavit of A W. Law, Secretary of The Monetary Times Printing Co., our printing contractors THE CANADIAN ENGINEER stands to-day unrivalled among Canadian trade papers for the wide distribution and character of its circulation

VOLUME III.		Date of Issue		Copies Printed and Mailed.
No	Date of Issue.	No		
1	May, 1895	4	Aug, 1896	3,450
2	June, "	5	Sept., "	3,975
3	July, "	6	Oct., "	3,745
4	Aug., "	7	Nov., "	3,800
5	Sept., "	8	Dec., "	4,050
6	Oct., "	9	Jan., 1897	4,100
7	Nov., "	10	Feb., "	4,350
8	Dec., "	11	March, "	4,350
9	Jan., 1896	12	April, "	4,350
10	Feb., "	VOLUME V.		
11	March, "	No	1, May, 1897	4,350
12	April, "	"	2, June, "	4,000
VOLUME IV.		"	3, July, "	4,350
No	1, May, 1896	"	4, Aug., "	4,400
"	2, June, "	"	5, Sept., "	4,500
"	3, July, "	"	6, Oct., "	4,400
		"	7, Nov., "	4,600

Departments devoted to Civil Engineering, Surveying and Mining, to Mechanical, Electrical, Locomotive, Stationary, Marine and Sanitary Engineering Sample copies sent free to intending subscribers Advertising rates on application

BIGGAR, SAMUEL & CO., Publishers

FRASER BUILDING, MONTREAL,

Or 62 Church Street, TORONTO

Telegrams:—"Kaolin," Manchester.


China Clay Co.,

JOHN A. SLATER, Man'g Director,
30 Leinster Chambers, St. Ann's Square,
MANCHESTER, Eng.

Mines—Ruddle, Bojca, Colchester, South Nine-stones, St. Austell, Cornwall.

Depots—Manchester, Runcorn, Preston, Leith, London.

Contractors to H. M. Indian Government



THE Curtis Pressure Regulator

for Steam, Water, and Air, is a regulator which is unequalled for simplicity, efficiency, and reliability.

These regulators have now been in use for twelve years, and have established a reputation second to none.

The use of this regulator means decreased expenses.

Manufactured by the

D'ESTE & SEELEY CO.
29 to 33 Haverhill St., Boston.
New York: 109 Liberty St.
Chicago: 218 Lake St.

TO STAND STEAM FOR YARN

GOP TUBES

AL APTEU

FOR ALL KINDS OF WARE

HAWTHORNE WOOLEN CO., Limited.

CARLETON PLACE,
Ont.

MANUFACTURERS OF

Fine Tweeds, Cassimeres, etc.

JAS. L. OKHART, SON & CO.,
Selling Agents, Toronto.

The best results in
Card Grinding
are obtained by using

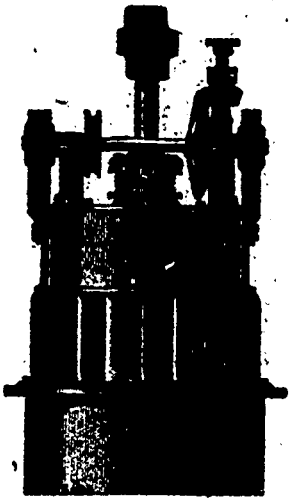


**DRONSFIELDS PATENT
D GROOVED EMERY FILLETING**
SPECIALITIES: MACHINES FOR GRINDING CARDS
MACHINES FOR COVERING ROLLERS WITH LEATHER

DRONSFIELD BROS. LTD.

Atlas Works, **OLDHAM, ENGLAND.**

COURTY 6'



THE McCORMICK TURBINE ...

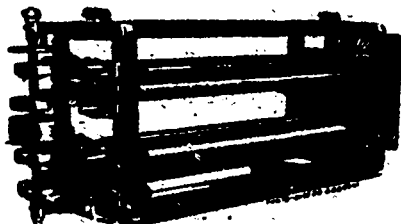
FEATURES WORTH CONSIDERATION:

Great Capacity, High Speed, Unequalled Efficiency, Steady Motion,
Easy Working Gate, Greatest Power from a Limited Quantity of
Water, at Smallest Cost.

Undoubtedly the Most Popular Turbine Manufactured.

Write for Catalogue.

S. MORGAN SMITH CO., York, Pa.
U. S. A.



We manufacture Barker's Patent Noiseless
Fast-running Doffing Comb

Barker's Patent Double Apron Rubbing Motions for Condenser Cards

*Are in successful operation on all grades of stock, being generally
adopted because they change carding and spinning
rooms for the better.*

James Barker, Cotton and Woolen Machinery
Second and Somerset Streets, **PHILADELPHIA, Pa.**

<p>Estimates for LEATHER RUBBER "THISTLE" and GANDY BELTING will be found favorable</p>	<p>We are the only Manufacturers in Canada making GENUINE OAK TANNED BELTING in "Extra," "Standard" and "Dynamo."</p>	<p>We Manufacture CARD CLOTHING set in OAK LEATHER, FLEXIFORT and RUBBER</p>	<p>HEDDLES, LOOM REEDS, PICKERS, RUB. APRONS, Etc.</p>
---	--	--	---

MONTREAL * THE J. C. McLAREN BELTING CO. * TORONTO

SAMUEL LAWSON & SONS, LEEDS, England

— MAKERS OF —

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

Special Machinery for the Manufacture of Binder and Ordinary Twines

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

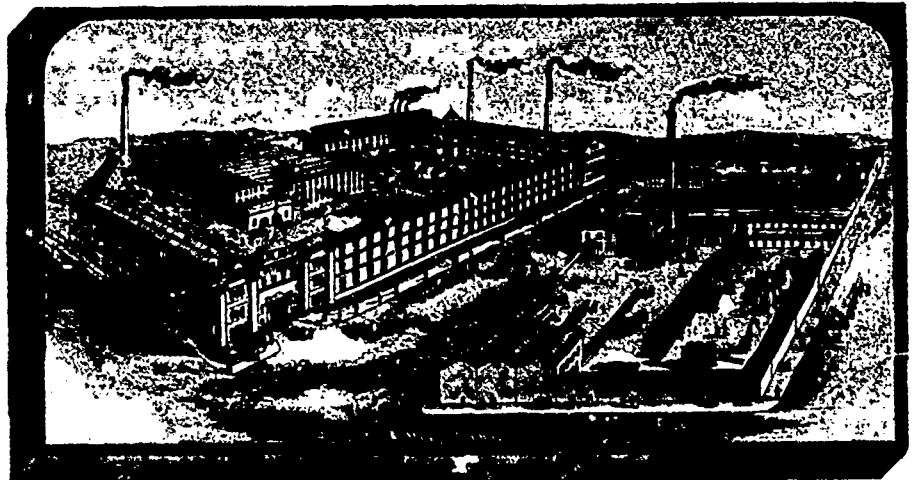
**Patent Automatic Spinning Frames
Improved Laying Machines**

and other special machinery for the
manufacture of Rope Yarns.

ALSO OF

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

Council Medal, London, 1851; Grand Medal,
Paris, 1867; Prize Medal, Moscow, 1872; Diploma
of Honor, Vienna, 1873; Highest Award, Phila-
delphia, 1876; Gold Medal, Paris, 1875; Highest
Award (Medal), Melbourne, 1880



WRITE TO THE

PATON MFG. CO.

Sherbrooke, Que.

FOR

Worsted Knitting and Fingering Yarns

"We hold thee safe."

**The Dominion Burglary Guarantee Co.
Limited**

Head Office, Montreal, Can.

CAPITAL, \$200,000.

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

JOHN A. GROSE, GENERAL MANAGER.

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



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