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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIV. TORONTO AND MONTREAL, DECEMBER 1897. No. 12.

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CONTENTS OF THIS NUMBER:

Editorial.

Woolens in Japan.

Canadian woolens do not make their way as they might, and the reason is largely found in the fact that Canadian manufacturers do not make the best use of the materials they have at hand, nor do they show sufficient enterprise in placing their products upon the market. Much might be done by opening up new markets. Blankets and flannels form the subject of a report by the Belgian Consul at Yokohama. Red blankets reach Japan from Germany, double whites being of English origin. The import duties on woolen blankets amount to 05c. per kilo. In the near future the imports will, doubtless, suffer from the well-equipped factory opened at Shinagawa. Colored flannels are imported into Japan from Germany and England. The import duties amount to 41c. per ten yards. Packing; tin lined cases, each containing from 20 to 30 pieces of from 40 to 45 yards. In 1896 flannel was imported to the value of $550,000. Japanese merchants wish all samples of textiles to be sent in bundles; they refuse to examine samples when glued upon sheets of cardboard Low-priced goods alone have any interest for Japanese buyers.

Credits.

A new plan for estimating the safe limits of credit is proposed among the manufacturers' agents in the United States. The plan is to obtain from each commission merchant the gross total of his sales to the individual buyers. It is assumed that the buyer is entitled to a certain amount of credit, but that under the present method of selling the agent cannot tell whether the buyer is exceeding this amount. Were agents to report to a central agent the total of his sales, the central agent could tell at a glance whether there was anything in the buyer's purchases which would lead him to be supicious of his actions, or which would reflect upon his credit. Theoretically, the plan is attractive, but the attempt to put it into practical operation would soon disclose its weakness. It would be of no value, unless it embraced reports from each individual seller, and sellers are too numerous to encourage the hope of this ever being an accomplished fact

Cotton Prospects.

The causes which have produced the present depression will pass sooner or later; they must yield to the recovery which comes after a period of depression. In the meantime they tend to depress the price of the raw material to a lower level. The question upon which an early or late recovery depends is mainly one as to the quantity of cotton which is available for the supply of the world. The weather in the cotton belt has been favorable for the development of the crop; and this has given rise to a notion that there will be a great quantity of cotton available, some estimates having been made which indicate the existence of nearly 11,000,000 bales. According to Thomas Ellison, an American crop of 9,400,000 bales of 500 pounds each will be required during the present season it the present moderate stocks be not exceeded; so that if the crop produces anything like 11,000,000 bales, there will be a very great overplus at the end of the sea-

son. Latham, Alexander & Co. have shown, in a recent report, that some of the bottom lands in Louisiana and Texas have had a remarkable degree of fertility, as much as a bale of cotton to the acre having been grown. This, however, is a maximum, and, as a matter of fact, half that quantity is probably much above the average. Supposing that the conditions are exceptionally favorable, so that the yield per acre is higher than has hitherto been obtained, about 10,000,000 bales will be available, but it is extremely probable that this figure will require considerable discount, and that there will be, so far as can be judged from present indications, a crop of about 9,500,000 bales.

Consulting Chemists.

In some of the large cities of the United States where textile manufacturing occupies a good proportion of the invested capital, consulting chemists are now making a good living by analyzing samples of various oils, dyestuffs, and soaps submitted by their clients. The majority of large mills regularly employ an expert chemist, of course, who co-operates with the dyer, and whose duty is to thoroughly test all dyeing materials which are used by the mill. Manufacturers make money by pursuing this policy, the gain much more than balancing the cost of maintaining this department. Few small manufacturers feel that they can regularly employ a chemist, and many seem to work to a large extent upon faith, that is, faith in the strength and purity of the dyes and extracts they are using. The result is frequently indifferent work, and more often exceedingly bad work. If all dyes, extracts, soaps and oils were of uniform quality, if the conditions under which they are used were the same, and if all dyers were experts this faith would not be misplaced. Since the opposite is true, the small manufacturers, and the ones who have not expert chemists in their employ, will further their interests by consulting such an expert when difficulties arise, or when the quality of dyeing materials is in question.

PATENT RUG CASE.

A case of considerable interest to textile manufacturers was tried before Judge Street, in the High Court of Justice, Toronto, in October. The plaintiff in the case, Frederick Bullock, a rag carpet manufacturer, Queen Street West, Toronto, brought action against Andrew Murray, Harriet Murray and Martin Fallon, for infringement of a patent for making reversible rugs from old carpets.

The plaintiff in his statement of claim declared, that after much experimenting, he invented an improvement in the method of weaving reversible rugs from old carpets, and that on the 3rd of October, 1895, he obtained a caveat relating to the invention, and applied for a patent which was issued to him on the 4th February, 1896. Immediately afterwards, he commenced the manufacture of the rugs; but by reason of having conducted his experiments on a loom owned and used by the two defendants last named they obtained a knowledge of the process, and almost immediately started the manufacture of these rugs also. He gave notice to them that they were infringing his patent, but circumstances prevented his taking action at that time; but he served formal notice on them in July, 1896. Defendants paid no attention to this, but continued to make the rugs, and showed them at the Toronto Exhibition in that year. Plaintiff applied for an injunction but was refused. The present action was taken, in which plaintiff claimed damages, and sought to have the defendants each and severally restrained forever from making or selling the rugs in question.

The defendants denied the novelty of the invention, and held that the operation of the device was purely mechanical, and related to the functions merely of the machinery employed. They held that the description of the alleged invention was vague, and the specifications were too wide in their claim, and therefore the patent was invalid. They also held that the invention was known to and used by defendants and others prior to the date of patent, and if the process was patentable, the invention belonged to themselves, as the defendant Bullock had obtained the information used by him in procuring his patent from the defendant, Andrew Murray. Further, the alleged invention, which was a mere aggregation of elements, and not a subject for patent, was described in a book, and was in fact set forth in various patents previously granted in the United States; among others, patent No. 520,400, date 22nd May, 1894, to Edward Cattlon, of Philadelphia; patent No. 184,637, date November 21, 1876, to Jesse B Lincoln, of Providence, R.I., and patent No. 456,147, date July 21, 1891, to Joseph F. Kieswetter, of Toledo, O.

It appeared from the evidence that the patent was taken out in the name of Fred. Bullock and Wm. Douglas, manager of the Toronto *Evening News*, who appears to have supplied the money to Bullock to carry out his designs, and who invested in it to the extent of about $500. The patent claim reads as follows: "The method herein described of producing a reversible rug from old carpets, consisting in cutting the old carpets into strips of suitable length and width, extracting a sufficient number of the upper and lower warp threads on each side of the strip, so as to leave a central core, then twisting each strip in the form of a spiral upon such core and introducing this spiral twist as a waft (weft?) between the upper and lower warp threads of the loom, then crossing the warp thread in front of the spiral weft, and finally bringing each weft home as set forth." The process of making the rugs consisted in taking an old Brussels carpet and cutting it into strips lengthwise of the piece, each strip being about an inch wide and of a length equal to the width of the rug to be made. The warp threads are then pulled out from each side till only a couple of the centre ones are left, leaving the cross threads of wool filling loose on each side, so that when the strip is twisted the cross threads stand out in all directions, and when put in as a filling thread, forms a thick pile on both sides of the fabric.

It appeared that the defendant, Andrew Murray, removed from Toronto to Chicago, where he was making these carpets, and that the plaintiff also went to Chicago, and while there worked for him, and having got an elementary knowledge of the process, came back and got out his patent. But it was proved that John Murray,

of Hamilton, the defendant's brother, had made these rugs in Canada before the plaintiff's patent was issued. The plaintiff claimed that the process could be applied to any kind of carpets, but John Murray produced a piece of carpeting which the plaintiff could not make up in the manner of Brussels rugs, and the same witness showed that according to the wording of plaintiff's specifications it would be impossible to make any kind of reversible rugs, the word "warp" being used in a place where a practical weaver would have said "weft." For these and other reasons His Lordship came to the conclusion that the plaintiff was not the originator of the invention, and gave judgment in favor of the defendants, with costs. The case for the defendants was ably handled by F. C. Cooke, of Pinkerton & Cooke.

THE UNITED STATES WOOL CLIP OF 1897.

The National Association of Wool Manufacturers has issued its December Bulletin, giving certain statistics as the result of their census of the wool clip of the United States for 1897. The peculiar situation of wool in this country led the Association to take more than its usual pains in the compilation of the annual estimate of the domestic clip. The figures of the Department of Agriculture, as to the number of sheep for this year, has been accepted as in years past. The Department's figures, however, differ materially in many instances from those of the State authorities, which are those of assessors, and it is found that almost without exception the latter report a less number of sheep than that given by the national department. The Association estimates the domestic clip for 1897 as follows:

Number of sheep	34,784,287	
Average weight of fleece	6.30	lbs.
Wool, washed and unwashed	219,153,251	"
Pulled wool	40,000,000	"
Percentage of shrinkage, fleece wool	60.10	
Scoured wool, fleece and pulled, estimated	111,365,987	"

This shows a decrease of over 13,000,000 pounds in the grease, or nearly 4,000,000 pounds clean, as compared with the clip of 1896; or a decrease of nearly 90,000,000 pounds in the grease, or 40,000,000 pounds clean, as compared with the clip of 1893. The production of wool in the latter year was especially large. The Association makes the available supply of wool for 1897, 702,568,428 pounds. This estimate is made up as follows:

Wool clip of 1897	259,153,251	lbs.
Domestic wool on hand Jan. 1st, 1897	123,588,080	"
Foreign wool on hand Jan. 1st, 1897	26,844,000	"
Foreign wool imported Jan. 1st to July 1st, 1897	292,983,097	"
Total	702,568,428	"

A similar statement last year showed the amount thus available to have been 508,549,594 pounds, indicating an increase of 194,000,000 pounds—nearly all foreign growth. It is noted that, notwithstanding the supply is in excess of that of last year, is not at all out of keeping with the strong market conditions which prevail. The demand for wool has of late been strong, and is likely to continue so, due to the active state of manufacturing. Manufacturers have a comparatively clear field, as the increased demand for their products has come upon a market not overstocked with foreign goods.

The Association makes a note of the tendency of sheep breeders to change from merino to mutton breeds, which has been the course for a number of years past. "This," it says, "in connection with a favorable winter, has resulted, in the territorial sections, in a somewhat lighter fleece, shrinking from two to three per cent. less than last year. It is, however, evident that, in the opinion of many, the movement towards mutton sheep has been carried to an excess, and that there will shortly be a reaction in favor of fine wool." These views have been entertained and expressed by us upon several occasions within the last two or three years; *i.e.*, more attention is given to crossbred wools than to the pure merino, which, in time, will make the wool of the latter comparatively scarce, unless a change in breeding is brought about more in accordance with old lines. The figures present some interesting facts relating to the percentage of foreign wools used in domestic manufactures. In 1893, when the domestic production of wool was particularly high, there was only 12.4 per cent. of foreign wool imported, while in 1896, when the domestic production was low, the percentage of foreign importation was 56.5. This relative use of foreign wools will probably be exceeded this year.

TEXTILE DESIGN APPLIED TO DRESS.*

It is, perhaps, unnecessary to enlarge, to any great extent at this particular time, on the advantages of textile knowledge. It is well understood and appreciated by you all as a matter of profound importance. But knowledge to be of use must be practical, and let us consider in this connection to whom we are indebted for much of that of which we make use. It is the experimentalist, he who by constant practice has mastered the mysteries of his craft, and whose knowledge extends to the numerous systems of intertexture, who introduces to the notice of the trade novelties in cloth, either in structure or color.

Practical technical knowledge is of the first importance in this connection, as by it the formation of a fabric may be intelligently understood and experimentally investigated. If it is advantageous to the student of chemistry and physics to experiment in the laboratory to ascertain the constitution of matter and the laws which govern the phenomena of the natural world, then most certainly must the art of textile designing require intricate consideration. It is a well-known fact that many of the richest and most appreciated specimens of the weaver's art do not owe their attractiveness to a strict or ingenious crossing of geometrical lines from a novel and pleasing arrangement and distribution of divers objects, or from an appropriate adoption of floral forms, but from some new principle of intertexture, some new combination of objects, producing something remarkable for its simplicity of design, neatness of appearance and novelty of structure. Novelties in textiles are invariably either the outcome of a fresh combination of weaves, a new principle of inter-crossing, or a systematic re-arrangement of colors. In the manufacture of wearing apparel, especially that designed for men, we

* Address by Fenwick Umpleby to the students of the Lowell Textile School, October 11, 1897.

are immediately concerned in what may be developed in the way of tasty patterns or new and pleasing combinations, both of color and weave.

We may, in this connection, experiment along certain lines, first with a thoroughly considered and well defined object in view, and second, in an accidental manner, keeping all the time a close watch on all possible developments, bearing in mind that the diamond unsuspected may lie in the pan of dirt at our very feet.

But where shall these experiments be conducted, and where is the student to get his practice, his information and experience?

The opportunities are not plenty in the places of business. The pattern room at the mill is not the place to conduct a great quantity of experiments, as time is considered too valuable to spend on ideas, some of which must, from the very nature of the case, prove delusive. The technical institutions, therefore, become the only place where such laboratory work can be successfully accomplished. It is, in other words, the place for such things, and there, and there alone, the student can, under the eye of the teacher, find help and encouragement for the pursuit of his investigations.

The question is often raised: Why are we a nation of copyists? but the answer is not far to seek. We are confronted by a condition and not a theory, inasmuch as the European nations are alive to this very thing, and are experimenting continually for the purpose of producing something new.

Now let us consider for a moment the object of all fashion, and to what end these exertions are made. Is it that we are not comfortably clothed already, are our garments not properly fabricated, or constructed in a becoming manner by the tailor? Certainly not, for we as a nation are proverbially well clothed. There is no mass of people on the earth's surface to-day whose clothing compares at all with ours.

But the human heart is never satisfied. A little more attractive pattern, a new style of cloth, or a new combination of colors; something must be new all the time. So as the seasons go by, the task of the designer becomes harder and harder. To meet these conditions the faculties must be enormously developed and improved. Experiments must be continually conducted for the production of novelties, and the hand and mind must be trained in the manipulation of tools and materials till absolute perfection is attained in all branches of the conception or manufacture of textiles, and then, and not till then, shall we, as a nation, be in a position to make true progress.

It is true we have made some enormous strides, and I would not belittle what has been done, but considering the actual conditions which confront us to-day, we are hardly "up with the times," so to speak; but success, to be of a healthy nature must necessarily come without acceleration, and to be of a healthy nature, must grow in a gradual manner that every point may be well understood, and every process have conservative consideration. The manufacturers of a decade past were in a far better position, relatively speaking, than at present, as far as markets and competition were concerned, but they had not the facilities for the instruction of artisans which they have now. The competition of others is more keen, but knowledge is more widely disseminated. We are liable to misfortune, but we rise to the emergency.

It is a suicidal policy for any designer to forever copy the ideas of his neighbors, far better something original, which has the recommendation of being new, and self-reliance thus obtained more than compensates for any little inferiority, either fancied or real. Merchants of all classes are continually asking manufacturers for original ideas of a pleasing character, and into whatever branch of the textile industries we look, we note an improvement that is almost incredible, compared with what we have been led to expect heretofore. But still the cry is for something better. Technical education fits a man to conduct his business to the best possible advantage. It fits him, also, in the least possible time. In Germany, France and England their schools have long been established, and the students have the advantage of large and well equipped establishments, together with their museums of extraordinary collections of textile fabrics, where they can examine the work of the best artists, and by knowing what has been done, know the better how to frame their own efforts, while we, starting late in the day, must redouble our efforts and perform everything that human endurance can perform to assist us in accomplishing the task before us. Sombre shades and unassuming fabrics have vanished to a great extent, and the general tendency seems to be towards a more pleasing combination of color and design. And the fabric which has not the essence of novelty of some kind, need make no bid for continuance.

In fact, the selling value of a woven fabric may be said to be almost exclusively represented by the amount of novelty of design it bears on its surface, and whatever other deficiencies may be apparent, nothing weighs for a moment in the scale against newness, or I might say, perhaps, oddity.

Were it not for fashion, less textile goods would be manufactured, and consequently less people employed, less money thrown into circulation, with perhaps resulting stagnation in other lines. Were it not for a cultivated taste, common and cheaper goods would be worn and satisfy our wants. Were it not for the educated skill of our designers, the business of manufacturing would not have reached its present enormous proportions. The designer who brings out a new and attractive novelty has only to introduce it to the trade to find a lively demand. Nearly everything that is new, novel and striking finds a ready sale at remunerative prices. Let us consider what tends to make success in designing, and what influences tend to create and propagate ideas. One of the great secrets of the proficiency of the European students is their beautiful surroundings, their periodical excursions to centres of fashion, and occasional visits to large cities to study the tendencies of the times and fill themselves with fresh ambition to pursue their calling. The French designer simply takes a stroll on the boulevards and observes the novelties of various kinds in well arranged windows, and the ideas thus acquired stimulate his ingenuity and help him to adopt what he has seen into some striking and

marketable novelty. I wish to say here that it is a mistake to shut a man up inside of four whitewashed walls and expect him to do good work. He needs to be reached by outside influences. He, of necessity, should see what others are doing in order to properly gauge his own capabilities and foster his ambition. A designer should have plenty of time to do his work. An idea when once taken up should be thoroughly worked out before taking another. If not, and he is hurried from one thing to another, he will invariably produce a great quantity of inferior articles, which in the end are unsatisfactory and perhaps disastrous to make, whereas if proper time were allowed, something perfect would have resulted.

A textile school in the city of Lowell is of the highest importance to manufacturers and machine makers, who may be said to be on one common level, as far as business prospects are concerned, and, therefore, great hopes might reasonably be centered in the undertaking which no other institution in the State of Massachusetts supplies, and for this reason the sympathy and support of all manufacturers should be freely extended in order to furnish not only appliances, but stock and material for working out in a satisfactory manner those problems which give practical education to our students. And the spirit in which the work has been started and continued up to this time gives strong hopes for the unqualified success of the school eventually. I strongly urge all to begin at the A B C of this profession and study with minute thoroughness every item and operation through which they may pass, so when once a subject has been laid aside, we may feel reasonably sure that no more can be gotten out of it for immediate use. It is imperative that you should be thorough in the first place and lay a good foundation to build on. That being once secure, the rest is comparatively an easy matter, and may be compared to the man who builded his house on a rock.

THE AUSTRALIAN CLIP.

The opening of the Victorian wool season took place on Oct. 13th, when a catalogue of about 3,100 bales of medium selection was submitted to an unusually large attendance of buyers. The offerings were mainly composed of Queensland wools and a few clips from Southern Riverina and the north-west of New South Wales. The continental section displayed the greatest activity; competition was extremely vigorous, and prices for good greasy merino wools showed an advance of ½d. to ¾d., and for medium and faulty classes ½d. per lb. grease, on last year's opening rates, whilst crossbreds moved only slightly above last year's level. Scoured wools, too, were about 10 per cent higher than last season; in lambs very little has so far been offered, and, in spite of their predicted scarcity, there was no particularly pressing demand for them. After the opening dates, according to Fuhrmann & Co., Limited, further instalments of Queensland wools from the Mitchell District, as well as several clips from Central Riverina, Lower and West Darling, Bourke, and Northern New South Wales were offered, and French buyers have continued to buy freely, whilst German and Yorkshire representatives showed less eagerness, and the American demand has so far been handicapped by the restricted selection in really suitable wools. The clip as a whole is fairly dry in the grease, finer and cleaner than last year, and the effects of the severe drought are not so generally prevalent as has been anticipated. Although the growth of the staple is decidedly thinner and by far not as deep as last season, there is not so much break as was expected, but the proportion of poorly grown and wasty wools will be a large one. Sound and deep grown warp-wools of ordinary 60's and 64's fineness will be notably more scarce than fine weft wools.

The season is a fortnight behind last year's, and the business done in the three colonial markets shows the falling-off as detailed hereafter:

	1897		1896.	
	Catalogued.	Sold	Catalogued.	Sold.
Melbourne.....	14,700	12,600	24,000	22,000
Sydney	42,600	40,000	61,000	55,000
Adelaide.....	16,200	15,400	32,000	26,000
	73,500	68,000	117,000	103,000

To this must be added the private sales of some 20,000 bales that changed hands in Sydney since 1st July last without having been catalogued for auction sale.

The first sale of Western Victorian wools was held at Geelong on 29th October; these wools seem to be hardly as well grown as last year and less bright, some having rather dusty tips.

DYEING.

Silk Dyeing—The Farbenfabriken of Elberfeld, have pleasure in bringing before public notice part 11 of their book called Dyestuffs of the Farbenfabriken, vorm. Fr Bayer & Co. and their Application in the Dyeing of Silk This book has been compiled by a practical silk dyer, and deserves credit in the manner in which it describes the way to finish the material and to prepare it for dyeing This pamphlet, although containing little which is new to the old practitioner, will be welcome and prove very useful, because it is drafted in a very comprehensive and concise form. The paragraph *General Review of the most* Important Colors used for Silk, shows all silk dyestuffs in systematic order, with an exact description, and with reference to pattern card spun silk No. 575-1897, you find most of the colors mentioned in the instruction book. The Comparative Tables of Fastness added to the pamphlet will greatly increase the practical value and utility of the book, and will permit the dyer a reliable selection of the fastest colors The above pamphlet will be mailed free to those interested in silk dyeing, on application to the Dominion Dyewood and Chemical Co., Toronto, sole agents in Canada.

Paper Dyeing—A new pattern card comprising Patterns on paper dyed in the Pulp, No 593-1898, has been brought out by the Farbenfabriken, which comprises all the colors suitable for paper dyeing, with exact methods; as for properties of dyestuffs they are already very well known Attention, however, is directed to the following dyes Turquoise Blue, Brilliant (Croceine) 3 B, Brilliant Rhoduline Red B, Azo Crimson L, Chloramine Yellow, Quinoline Yellow, and Acid Green, which are very clear, and penetrate well This card, although done in an experimental way, has been prepared with great care, and dyers will find this a most useful card for forming shades and comparing tints and estimating depths of colors, etc. This card will be forwarded to all dyers interested in paper coloring on application to the Dominion Dyewood and Chemical Co., Toronto

NEW COLORS

Benso Nitrol Brown, a new color recently brought on the market for cotton printing, throws a peculiar brown shade not obtained with any other colors. It is described in Benzidine supplement pamphlet.

together with many other colors already introduced and well known. This supplement, together with the pamphlet published at Elberfeld last year, forms one complete book, and this contains all the particulars of the Benzidine colors up to date, and gives customers a good idea about all branches of cotton printing. The illustrated tables on the properties of the Benzidine colors and their application in cotton printing will prove very useful and meet with general approval, as they are a good guide to printers when selecting the products to be used.

New Toluylene Browns B M and B B O.—Three new shades of Toluylene Brown, which resemble the former brands very closely, but are somewhat faster and cheaper in price. It would scarcely prove of benefit for dyers who are using the former brands of brown to change to the new Toluylene Browns. The Benzo Browns are more suitable for some purposes. The Benzo Chrome Browns by the system of after chroming are fastest of all, and should always take preference where price does not stand in the way. The Benzo Chromo Browns, besides being remarkably fast, give similar shades on cotton and wool, thereby being especially suitable for Unions and half-woolens.

Alizarine Viridine in paste (patented).—A printed circular has recently been brought out in which the printer is offered a most interesting color in the form of Alizarine Viridine, which is, as the name implies, a fast green. In cotton printing, a direct green of uniform make, fixable by chrome and dischargeable by means of oxidation, is of greatest importance; and as the properties of fastness of this product appear to suit for the above method, it should meet with approval.

Sulfon-Acid Blue B and R.—In May and June last, these two new colors were brought out, but now pattern cards have been prepared and printed circulars have been issued which describe the above colors exactly, pointing out their fastness to light and relation to the Sulfon Cyanine family of colors.

Fashion Shades on Woolen Cloth, 1897-98.—This new card containing hundreds of shades and tints heretofore unknown is brought out each year by the Farbenfabriken Co., of Elberfeld, at great expense; it has been prepared with great care and accuracy, and with special pains. Only the most suitable fast colors selected making all recipes as simple as possible for the practical dyer. This card has proved of inestimable value for comparing shades, and in matching colors accurately and expeditiously.

Benzidine Colors on Mercerized Cotton Linings, No. 628.—Benzidine Colors on Mercerized Cotton Yarn, No. 599-1897, met with such general interest, and all cards having been distributed, a new card, named the above, on pieces for all those interested has been brought out by the Farbenfabriken of Elberfeld. This card is prepared with a number of shades just now in fashion for linings; to produce such shades, the Benzidine colors suited extremely well. For this card, address Dominion Dyewood and Chemical Co., Toronto.

THE LONDON WOOL SALES—SIXTH SERIES.

The sixth series of Colonial wool sales of the present year commenced on the 25th Nov. Balme & Co. report that during the interval which has elapsed since the close of the last auctions, the course of events has been such as to tend to reduce the influence of short supplies upon prices. Under these circumstances, although the quantity which was available for sale, some 58,000 bales short of the net supply for the same series in 1896, wool values at the first day's auction marked a slight decline in average from last sales' parity. The selection offered was, so far as Australasian produce is concerned, a fairly comprehensive one, including as it did a good many parcels of the new season's clip. Buyers were present in large numbers and from all quarters, but competition can scarcely be called general, inasmuch as French and German operators took the bulk of the offerings. The better classes of merino wool, which were in small supply at the opening, fully maintained the position they occupied at the close of the fifth series. Owing to the condition of a large proportion of the new clip, however, faulty and inferior unwashed stapl. was a predominating quantity, and rates for such descriptions, in consequence, weakened to the extent of 5 per cent. Although the amount of crossbred wool in the market was small, this class also has depreciated to the extent of 5 per cent. in average, the brunt of the decline being borne by slipped and scoured produce, which figured largely in the first day's catalogues. The South African staple offered was confined almost entirely to Western Province wool, which exhibited some slight weakness, hardly amounting, however, to a quotable change in price. The series closed on December 7th with a good attendance. The offerings in the last day aggregated 10,727 bales, and of this number 1,000 were withdrawn. South Wales greasy realized 10d. for American. The continental buyers bought scoured eagerly and inferior wool sold. The closing tone of the sale was firm. During the series 121,720 bales were offered, of which 105,000 were sold. Of this number the home trade took 37,000, the continent 65,000 and America 3,000 bales. The prices realized showed good merinos and crossbreds unchanged, inferior to medium greasy and scoureds par to ¼d. lower. Slipped crossbreds ½d. to 1d. lower. Cape of Good Hope and Natal eastern fleece, washed unchanged and others par to ½d. down, and lambs unchanged. The next series will be held January 18, and the second series for 1898 is scheduled to open March 15.

Textile Design

WOOLEN CLOTH.

Yarns dyed in stock—Finished weight, 21 ounces for 56-inch width.

Dressed.—3,456 ends, 6-4 warp; 2 threads face, 3 run, 1 thread backing, 2 run.

Filling.—All 3¼ run; 40 picks to inch. Reed 74 inches over all.

Twill to right.
Warp.—Both back and face twisted to right.
Fill twisted to right.

2,304 ends, 3 run face warp, equal 8.44
1,152 " 2 " back " " 6.33
40 picks, 3¼ run filling, " 10.01

Total weight 6-4 yard flannel equals 24.78 ozs.
18.45 oz. face warp and fill st'k. sh. 12½ per cent. equal 21.00
6.33 " back " " " 15 " " 7.44

Total weight stock required for 6-4 yards equals 28.44 ozs.
21 oz. face stock warp and fill at 42c per lb. equal $ .55 round numbers,
7.44 oz. back stock, at 30 8c. per lb. equals.... .14 "

Total cost stock 6-4 yards, equals ..... $ .69
Total cost manufacturing 6-4 yards, equals .45

Total cost 6-4 yards at mill $1.14

Face Warp and Filling Mixture.—75 p.c. wool at 50c. per lb. / 25 " shoddy at 18c. " } = 42c.

Backing Warp Mixture.—60 p c. shoddy at 18c. per lb. / 40 " wool at 50c. " } = 30 8c.

HEAVY WEIGHT CASSIMERES.

Yarns dyed in stock.—Finished weight, 21 to 22 ounces 6-4 yard.

Trousering.—Hair-line weave.

Suitings.—Twill face plain weave back.

Hair-line dressing.
1 face wool, 3½ run.
1 black cotton, 2-30
—
2 threads pattern.
4,200 ends, 6 4 warp.
2,100 ends, 3½ run warp.
2,100 ends, 2-30 cotton warp.

Woven.—56 picks; 3 run fill. Reed 74 inches over all. Hair-line chain-draft.

Hair Line Chain draft.

2,100 ends, 3½ run wool, equals 6

2,100 " 2-30 cotton " 3¼
56 picks, 3 run " 15¼

Weight from loom equals 24½ ozs.
1¼ ozs. wool shrink 12½ per cent. equals 24
3¼ ozs. cotton " .05 " " " 3½

Stock required for 6-4 yard equals 27½ ozs
24 oz woolen at 40c. per lb. equals $0.60
3½ " cotton " 18c. " " 0.04

Cost of stock for 6-4 yard equals $0.64
Cost of m'f'g for 6-4 yard equals 0.45

Total cost 6-4 yard at mill equals $1 09

Stock mixture for both —Warp and fill for hair line, warp and face fill for suiting.

75 per cent. wool at 48c.
25 per cent. shoddy at 16c. } equals 40c. per lb

Blacking for suiting.—

20 per cent. wool at 48c.
20 per cent. cotton at 08c.
60 per cent. shoddy at 16c. } 21c. per lb.

Suiting Dressing.

2 face wool
1 back cotton 2-30 run

3 threads pattern.
3,600 ends, 6-4 warp.
2,400 ends, 3½ run woof
1,200 ends, 2.30 cotton.

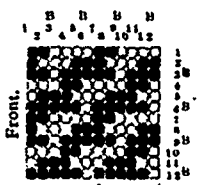
Woven.—54 picks to inch.

2 picks, 3-run
1 pick, 2-run

3 picks to pattern.

Reed 72 inches over all.

Suiting Chain Draft.



Straight draw, twill to right.

2,400 ends, 3½ run equals 6¼
1,200 ends, 2-30 cotton " 1¾
36 picks, 3 run " 9½
18 picks, 2 run " 7¼

Weight from loom equals 25¼ ozs.
16¼ oz wool shrink 12½ per cent. equals 18½
7¼ " " " 15 " " 8½
1½ " cotton " .05 " " 1¾

Stock required for 6-4 yard equals 28¼ ozs.
18½ oz woolen at 40c. per lb. equals $0 46
8½ " " " 21c. " " 0 11
1¾ " cotton " 18c. " " 0 01½

Cost of stock for 6-4 yard equals $0 58½
Cost " m'f'g " " " " 0 50

Total cost 6-4 yard at mill equals $1 08½

—*A. W. & C. R.*

THE WOOL MARKET.

TORONTO.—The market is very quiet, and the whole situation practically unchanged. The demand from the mills is steady and nearly all seem to be running full on orders so that tone of the trade is better than for some time past, though prices are not materially changed. There is no fleece on the market. We quote: Fleece, nominal, 20 to 21c.; pulled wools, somewhat easier, 20 to 21c.; extra, 21 to 22c.

MONTREAL.—The market is quiet, but the demand from the manufacturers is steady at full prices. A cargo of Cape recently arrived is now being delivered, most of it having been sold to arrive. We quote: Greasy Cape, 14½ to 16½c.; B.A. pulled wools, 25 to 35c.

WE LIKE IT, TOO.

BIGGAR, SAMUEL & CO.

DEAR SIRS,—I enclose you P O. order for $1 due for one year's subscription to the CANADIAN JOURNAL OF FABRICS, with which I am well pleased.

Wishing your journal every success and prosperity, I remain, yours truly, (Sgd.) ALEX. STEWART.

Hespeler, Ont., Dec. 6th, 1897.

CORRECTION.

Editor CANADIAN JOURNAL OF FABRICS.

SIR,—We beg to call your attention to the article published in your November number, on page 337, under the heading, "New Fast Color Process." The method which you have stated as being invented by the Farbenfabriken of Elberfeld Co. was patented by us, and we are sending you under separate cover our latest pamphlet relating thereto.

Yours truly,
WM. J. MATHESON & CO., LIMITED.

178 Front St., New York, Nov. 27th, 1897.

LITERARY NOTES.

Rudyard Kipling's first "Just-So" story, which will appear in the Christmas number of *St. Nicholas*, is illustrated by Oliver Herford. It is the first of a series of fantastic stories about animals

"The Adventures of Francois," the new novel by Dr. S. Weir Mitchell, author of "Hugh Wynne, Free Quaker," will begin in the January *Century*. It is a story of the French Revolution, its hero a foundling and adventurer. The tale is one of adventure throughout, but all of it portrayed with Dr. Mitchell's keen characterization and wit.

"Sheldon's Buyer's Reference Book for 1898" has reached us. This is a most convenient and well gotten up book of reference, containing classified lists of the selling agents of the various cotton and woolen goods; also the manufacturers' agents and importers of silk and linen fabric, notions and fancy goods. Published by *J. D. Sheldon*, Leonard Street and West Broadway, N.Y.

We have been pleased to receive a copy of Posselt's Textile Library, Vol. III. This volume contains more than 600 illustrations, and goes fully into the construction of modern power looms, and is an illustrated work on loom fixing. It also illustrates and explains the most modern makes of Jacquards, card stamping machinery, etc., and explains modern machinery connected with weave room, viz., spoolers, winders, warpers, etc. It is not a history of weaving, looms or other machinery, and only the latest and most approved machinery, devices and appliances are illustrated and explained. Published by E A. Posselt, editor of the *Textile Record*, Philadelphia, Pa.

The Christmas number of the *Canadian Magazine* makes a very fine souvenir to send to friends abroad. The illustrations of the four seasons fo the poem "The Chamber of the Dream" compare with any foreign work of art both as to design and engraving. Prof. Goldwin Smith, in an article of scarcely more than two pages, demolishes the whole structure of Dr. Buck's recent article attributing Shakespeare's plays to Bacon. Among other contributors of note in this number are Gilbert Parker and Dr. Parkin. The Christmas literature is excellent and plentiful, the whole number making 100 pages.

We have received the fifty-first volume of the Canadian Almanac from the publishers, Copp, Clark Co., Limited, Toronto. Besides being a directory of clergy, militia, Government officials, members of Parliament, county and municipal officers, schools and colleges, barristers and solicitors, and other public men, it is a compendium of information of all kinds relating to Canada. Some of the more prominent departments are: Short History of Canada Tariff of Customs, Forms of Government throughout the world, Post Office Gazeteer, Masonic Lodges, Miscellaneous Societies, Historical Diary, Life Insurance. Some new features for 1898 are. Short Accounts of the British Army and the British Navy, with illustrations, also articles on the English Government, and Extradition and Pardons Besides the

above, with every copy of the Canadian Almanac for 1898 is presented a map of North America, beautifully engraved and printed in five colors. The price, 25 cents.

Those who have read the book "In the Days of the Canada Company," by the Misses Robina and Kathleen M. Lizars, will be keen to read any fresh contributions from the same source, and when a new book was announced the other day dealing with the rebellion times in Canada, there were confident anticipations of a good treat. The book has appeared and our anticipations have been realized. "The Humors of '37," is not an ill-chosen title as might at first sight appear, for taking the word humor in a broad sense we have in this a judicious and appetizing mixture of "the grave, the gay, and the grim." We should expect in a book on this subject plenty of the grave and grim, but we do not always associate gaiety with reason, though fun is often tumultuous In this work of 369 pages, the reader will, however, find instruction and amusement combined with a tact and instinct possessed by few writers. To the old, the "Humors of '37" will recall many a scene of those exciting days, while to the young it will give much solid information in an entertaining garb relating to a great crisis in Canadian history. The book is published by Wm. Briggs, Toronto, and like all the recent publications from this house is excellently printed.

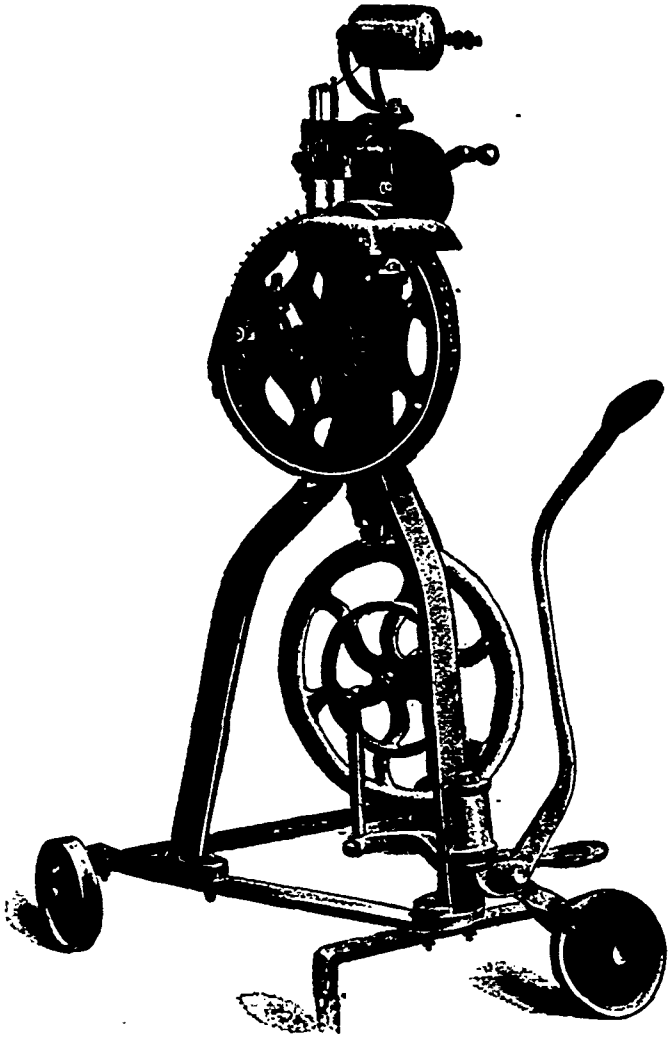
Undoubtedly the book of the year on South Africa is that written by Poulteney Bigelow, at the request of Harper Bros., New York, by whom it is published. It was fortunate for the author that he had written his other interesting book, the "History of the German Struggle for Liberty," before his visit to South Africa, instead of after, for he had thus opportunities of comparing German official methods with British methods in relation to the Dark Continent, and while he writes with an American's prejudice in favor of the republican form of government, and is most enthusiastic in his admiration of President Steyn, of the Orange Free State, and Paul Kruger, of the Transvaal —to the former he dedicates the book—he gives enough light on German and Hollander official character to show the Boers what their fate would be if they fell under control of those countries. Our author admits that the surrender of the Transvaal to the Boers in 1881, though magnanimous, was a mistake. "The Boer Government to-day is applying to a complex modern community administrative principles fit only for a community of cattle herders and teamsters." The recent agitation which led to the Jameson raid "was not an English rebellion against Dutch domination, but a union of Americans, Afrikanders, English—in short every white man who was not an official of the Boer Government, was heartily in favor of a reform in the Government." The Boers confessed their incapacity for governing a modern State by enacting that revenue was to be raised by selling monopolies. "The political economy of Spain in the days of Philip II. was applied by Paul Kruger of 1896 to a community of the most modern and progressive manufacturers ever assembled together in one spot." The system opened the door for every species of bribery, until to-day the Government of Paul Kruger is more corrupt than the most debased pashalic in the Turkish Empire. To end this *regime* will be in the highest interests of the Boer people themselves, as well as their British neighbors. We regret that lack of space prevents us just now from quoting from the mass of information given concerning the present condition of the trade, manufactures, and mining interests of South Africa. The book has 70 illustrations, and has diverting sketches, as well as chapters on trade and political problems.

PIECE END SEWING MACHINE.

The superiority of this machine over every other is, the makers claim, being demonstrated each day by a stream of orders and testimonials. The claim for this machine is that it is far better than any other make. If on receipt this is not at once apparent, consignees are requested to kindly return. It can be supplied with either power or portable stands.

Harrison & Coombs, of Victoria mill, Bramley, near Leeds, write on Dec. 1st, 1896, as follows —

"We have great pleasure in saying that your chain stitch sewing machine is the best we have ever had in our place. It does its work quick and sure, and we can say the machine has never been out of order since it commenced running. We trust our second order will be completed at once."



PIECE END SEWING MACHINE.

These machines have been sold for two years and only one has been sent back for repairs. Sewing machines are specially made for woolens, felts and other heavy goods, and all kinds of sewing, tambouring, and edging machines are supplied. The makers are W. H. Harrap & Co., Richmond Hill, Blackfriars st., Salford, Manchester, England.

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports into Canada during Oct., 1896, 1897, and the nine months to Oct., 1896, 1897:—

	Month of Oct.,		Ten months to Oct.,	
Exports to Canada.	1896.	1897.	1896.	1897.
Wool	£ 424	£10,574	£ 7,040	£30,976
Cotton piece-goods	18,300	17,750	372,072	315,879
Jute piece-goods	13,142	15,710	132,730	108,037
Linen piece-goods	4,429	7,770	122,240	99,533
Silk, lace	....	350	6,900	4,647
" articles partly of	849	1,385	24,466	17,367
Woolen fabrics	8,308	6,954	238,979	202,245
Worsted fabrics	19,224	26,776	467,195	491,648
Carpets	4,275	4,900	142,943	120,793
Apparel and slops	24,726	28,702	311,502	265,579
Haberdashery	5,228	7,124	141,962	127,287

TEXTILE ORNAMENTATION.*

(Concluded from last issue.)

Dr. Rock, in his "Textile Fabrics," has much to say on Indian cotton and linen. He tells us: "When Alexander wished to give some ambassadors a splendid reception he had a grand display of golden couches upon which to lie to eat their meat. They were screened with cloths of gold and purple, and the Indian guests themselves were not less gorgeously clothed in their national costume, for they came wearing linen garments equally resplendent."

The passion for finery, the love for brilliant, extravagant dress which distinguished the inhabitants of the maritime cities of Venice, Calabria, and Campania, arose out of the fall of the western empire, but the Romans when withdrawing from these countries did not carry with them that love for rich fabrics which characterized the people they were leaving. And we know that the Iberians wore coarse and dark colored woolen garments, whilst, on the other hand, the Gauls were at the same time remarkable for their brilliant costumes, which were at times ornamented and enriched with precious stones, embroidered in gold and silver, and of many bright colors. This display of finery required to be constantly ministered to; so the native looms were set up in rivalry to those of Greece and Rome, and they resisted for some time the rude shocks of successive inroads, which were made upon them, but were at last driven to take shelter in the cloisters of the religious monasteries. Thence it was in these hallowed places that was mainly fostered the practice and art of ornamenting textile fabrics, which ornamentation was carried to a very high degree of perfection. From this time these retreats gradually became centres of active industrial life. Trades, businesses and handicrafts of all descriptions were now clerical pursuits, and were practised under the shadow of the Church by wealthy and powerful associations. There was a feeling alive in the Middle Ages that the best of all things should be devoted and given to the Church.

Knowing these facts, we do not wonder that ecclesiastical buildings possess so very many valuable relics of artistic textiles, nor yet are we surprised at the holy pontiffs, bishops, priests and abbots encouraging the manufacture of ornamental fabrics, especially those materials which were to enhance the pomp of religious worship. Hence we have those marvellous capes still so jealously preserved in our churches and cathedrals, which astonish us even now, in our advanced age, by the finished workmanship which almost defies imitation We read of the reliquaries adorned with gold and jewels, made by Saint Eloi, to be placed on the shrines of the saints, which shrines were usually covered with a silk veil, mostly woven in the precincts of the cloisters. At that time these veils were always embellished with costly embroidery, and were much used in sacred edifices. Gregory of Tours often mentions these wonderful fabrics, while other writers give long descriptions of the tapestries of divers sorts which were hung on the walls of churches, some entirely of silk, others ornamented with pictorial representations. Costly raiment, handsomely decorated with the most skillful and ingenious designs, has been in use in the Church from the very earliest times.

From the document published by the order of Master of the Rolls, we learn that the vestments of Evesham Abbey were of silk, and that silk has played a most conspicuous part in the vestments of all pious and fervent worshipers from time immemorial. The best capes, chasubles and vestments in St. Paul's, London, were made of silk, so were the gorgeous chasubles bequeathed to Durham Cathedral, the chief of which was red samit (silk) superbly embroidered. The genuine monuments of Christian art which we read of being placed in the catacombs of Rome (subterraneous excavations which were used for the burial of the dead, and as places of Christian worship), include many precious relics of antiquity—paintings, works of art, and frescoes, illustrating scenes from holy writ; these sacred monuments have been seen, admired and glorified by the frequent pilgrims to that eternal city, who, on their return to their native homes, applied and followed the arts and examples of their predecessors in adorning the sacred vestments and fabrics of their churches.

Still this extravagant and sumptuous display of richly ornamented fabrics, for the use of holy worship, did not meet with the approval of all the holy pontiffs; in fact, it was deplored by some of the most austere servants of the church. We read that Saint Caesarius, also Bishop of Aries, in the sixth century, forbade, especially in the nunneries, the use of fancy ornaments embroidered in silk or in bombazine, and he hurls fearful anathemas against such stray sheep as would not yield to his orders.

In the Council of Cloveshoo, in the seventh century, the nuns were advised "to spend more of their time in reading and singing of the Psalms rather than in knitting and weaving of vainglorious garments of many colors." Notwithstanding the zeal of some of the fathers and priests to try and bring the limit of ornamentation within the boundary of economical and virtuous display, some of the most gorgeous fabrics and the richest tapestries continued to be sold, and even manufactured, under the very shadow of the churches they were intended to decorate. With all these ecclesiastical ornaments, the brilliance of which was heightened by gold and silver, at times by sparkling gems and precious stones, we cannot wonder at the taste for magnificent costumes, fabrics and tapestries, being fostered and spread abroad; but the very churches and cloisters that had nursed the art of manufacturing, and the sacred retreats that had thus fostered the gorgeous display, soon became unsuitable places for further patronage in proportion as the great and noble of the land began to have recourse to rich apparel. Gorgeous materials were in demand for every kind of enjoyment; at home and abroad; they were not only used for decorations on the walls of sacred edifices and apartments, but also for the tents of kings, feudatory lords, for war, for chase, and for the tournament.

The Very Rev. Daniel Rock, D.D., tells us of many worldly displays in which rich garments had a foremost part. We read of the streets of London (in the time of Elizabeth), "being cleanly dressed and besene with clothes of tappestrage, and some streets, as Cheapside, hanged with rich clothes of gold, velvets, and silks." Extravagant and costly fabrics have been used in England, and in all foreign countries alike, in providing richly-ornamented palls with which to cover the biers of the dead, more especially for those of the members of the various guilds, and D. K. Rock gives us an account of the obsequies of Henry the Seventh, in Westminster Abbey, a copy of which I give:

"Two herands came to the Duke of Buck and to the Farles, and conveyed them into revestre, where they did receive certain palles, which everie one of them did bring solemnly betwene theire hands, and cominge in order one before another as they were in degree into the said herse, they kissed theire said palle and delivered them unto their said herandes, which laide them upon the King's corps, in this manner; the palle which was first offered by the Duke of Buck, was laide on lengthe on the said corps, and the besidewe were laid acrosse, as thick as they might lie."

*By Fenwick Umpleby, Graduate of Yorkshire College, Leeds, England, and Instructor in Textile Design at the Lowell Textile School.

The friends of W. H. Brown, late manager of the Consumers' Cordage Company's Works in Port Hope, Ont., will be glad to hear of his being the recipient of a handsome clock and address, the gifts of the employees of the company at that point. The presentation took place at Mr. Brown's house in Port Hope. Mr. Brown is leaving Port Hope for Quebec.

WOOL IN ARGENTINA.

Writing on the above subject, a correspondent supplies to an official publication some interesting information. He is inclined to believe, although realizing fully the risk of criticism run in making the conjecture, that a probable maximum production of wool has been nearly reached in the Argentine. In making this statement he in no sense wishes to be understood as believing that the development of the country will be either slow or small in the future, and believes that the country will show a remarkable development during the next ten or twenty years. His reasons for this belief regarding wool production in Argentina are: The great increase which has taken place, and which continues, in the exportation to Europe of live sheep and of frozen mutton; the marked and profitable attention being given the production of fat cattle for export and the consequent neglect of sheep husbandry by such estancieros; the reasonable probability that whatever increase may take place in the production of wool in the undeveloped southern portion of the Republic, by reason of an increase there in population, will be offset by a reduced wool production in the central and northern portions of the Republic, where the area of grazing land which can be profitably left uncultivated will be reduced if the desired tide of immigration sets in toward Argentina; because it is but reasonable to conclude, using the past history of the country as a basis, that four-fifths of whatever immigration goes there will remain in the present well-settled central zone rather than go to the cold and unsettled lands of the southern portion of the Republic. If this is true, the area of grazing land now occupied by sheep in the centre of the Republic will certainly be greatly decreased by an increased agriculture. In addition to the above, there is to be taken into account the effect had on the flocks of the country, as on those of all other countries, by drought, locusts, cold seasons, and diseases. Two-thirds of the immigrants now going to Argentina are Italians. It seems probable that these will add but little to the development of sheep husbandry in the far southern portion of the Republic while opportunity is found to settle in the warmer and more closely populated portions of the country, where they are more than reasonably sure to succeed in accumulating a modest competence as a result of their labor upon small farms and in different industries. During each of the past twenty years the quantity of wool exported from the Republic has been as follows:

	Tons.		Tons.
1877	97,310	1888	131,743
1878	81,708	1889	141,774
1879	91,951	1890	118,406
1880	97,146	1891	138,606
1881	103,877	1892	154,635
1882	111,010	1893	123,230
1883	118,404	1894	161,907
1884	114,345	1895	201,353
1885	128,393	1896	187,619
1886	132,130	1897 (approximate)	186,000
1887	109,164		

It will be seen from the above that the increase in production has been a trifle over 92 per cent. in the past twenty years. The sum total of Argentine wool exported to the United States during any one of the past twenty years has not exceeded 6.05 per cent. of the total exports of the Republic, while it has fallen as low as 0.89 per cent. The mean average for the twenty years has been 3.51 per cent. The production of Criollo or Cordoba wool is decreasing slowly but steadily in the Argentine. This arises from the cause already spoken of—the use of Lincoln blood. It has been found, however, by flock owners in Cordoba that crossing their flocks with this blood is not giving as good results as were anticipated.

COTTON YARN PREPARATIONS AT THE LOWELL TEXTILE SCHOOL.*

CHANNING WHITAKER, LOWELL, MASS.

The paper which I am about to read relates to a department of the school into whose work the question of the design of the fabric does not enter. But unless the yarn is a success and skillfully adapted to the design of the fabric the fabric will not be a success. In the earlier period of American technical education it was urged by some that while classical education developed the natural abilities of men it failed to fit them for the duties of life, and that technical education was superior because that fitted them for those duties. Others thought that even if technical education was thus utilitarian it would necessarily fail to develop those finer characteristics of manliness which were the natural results of classical education. Within the recollection of the writer, there were in the technical schools teachers whose fundamental aim and loftiest effort for their pupils was to promote the acquisition by them of scientific principles and practical arts. But gradually the important fact came to be appreciated that the fundamentally noticeable and important result of excellent technical education, which completely overshadows its purely utilitarian result, is the part that it plays in the making of the man. In technical, as in classical education, the training is of first consequence and the subject matter secondary. What Moxom has so well said of education in general might have been said of technical education with equal truth: "The end of education is not knowledge simply, nor skill, nor power to do things, but manhood and womanhood. Education is a process, not so much of accretion as of unfolding, and its end is not specific attainments, but largeness and symmetry and sweetness and forcefulness of the whole nature."

But technical education is not unimportant from a purely utilitarian aspect. As the beneficent influence of technical education has extended, the rapidity of the advance in every practical art has increased, until the doings of ten or even five years ago in such an art is apt to be ancient history. Even the art of education, of technical education, is no exception in this respect.

Notice the advance which has occurred in the common methods for the teaching of physics. Formerly, the method most highly approved was that of the eloquent lecturer, whose delightful explanations and skillfully-conducted illustrative experiments charmed the class. Now, the approved method is by the experiments of the pupil under the direction and oversight of the skillful teacher, whether the pupil is in an ordinary high school or Jefferson laboratory of Harvard University. Under modern methods the observing, thinking, acting pupil has taken the place of the pupil who was acted upon by the lecturer. The fascination which attended the brilliant unfolding of scientific principles by the lecturer of the earlier time can never be forgotten, and one's gratitude to the lecturer will never pass away, but he is blind who cannot perceive the more rapid development of manly qualities and the greater intensity of the delight which naturally attends the personal discovery of truth, when one makes search for it armed with suitable appliances and under the direction and supervision of wise leadership. A stupid man is wholly out of place as the director of a physical laboratory, but, given a man who is in every sense the peer of the earlier lecturer, give him the best modern appliances for directing the re-discovery of the known principles of physics by experiment, and you have, in the man and the appliances, better means than formerly for the making of a man; better means than formerly for becoming acquainted with the principles of the science. Under the modern conditions of the laboratory method of education, the teacher has a better opportunity for observing the habits and characteristics

*Reprinted from the Transactions of the New England Cotton Manufacturers Association, at Philadelphia, 1897.

of his pupils and for influencing the making of the man, while the pupil has a clearer and a more permanently impressed conviction of the truth which has been the subject of study, and his resultant mental vigor is of a more fearless, aggressive and successful type.

It is fortunate for the newly-organized Lowell Textile School that before its inception the current in the older American technical schools had permanently set toward the laboratory method of education whenever a suitable equipment could be had, and that the committee of equipment of the new organization proceeded, as a matter of course, to give it at the outset such an equipment as would make laboratory education practicable.

It will be interesting to look in upon the cotton yarn preparation department, which plays an important part in its cotton manufacturing course, and to learn something of its equipment, its pupils, its teachers, its subjects of study, its series of lessons of the first year, now in progress, and the model for the lessons. In the large well-lighted room which has been assigned to this department may be found an excellent example of each of the machines which are commonly used in the preparation of cotton yarn. They are arranged as they would be in an up-to-date cotton-yarn manufactory. There are also separate constructions which exhibit mechanisms or "motions" which are also assembled with others in the complete machines, but which can be more readily studied in detail when they are removed from their usual environment and so mounted as to reveal their peculiarities of construction. Usual appliances have been provided for testing the cotton in the different stages of yarn production. Of very great value is the series of charts, in white lines upon a dead black surface, upon which are shown: First, the features of the processes or of the machines which are the subjects of study: second, the fundamental statements of fact or of principle with which the pupils become familiar: third, the illustrative examples which are worked out in detail: fourth, the problems which are to be solved.

These all relate to the processes for producing cotton yarn or to the machines in which such processes are conducted. They are sub-divisions of the broader subject of mechanics, which is a sub-division of the still broader subject of physics. Its series of lessons for the first year is designed to permit the interested pupil to discover by his own investigations under skillful guidance:—the nature and order of the processes for producing cotton yarn and how to conduct them: the nature of the machines for making cotton yarn and the fundamental facts, principles and calculations which one needs to understand if he is to adjust and to use them intelligently. The order in which the questions of the series are taken up is that of the processes to which the cotton is subjected as it passes from its tangle in the bale to its place upon the weaver's cop or beam or upon the bobbin or the cone of the knitting machine. The machines which are particularly considered are the automatic feeder, the opener picker, the finisher picker, the traveling flat card, the stationary flat card, the sliver lap machine, the ribbon lapper, the comber, the railway head, the drawing frame, the slubber, the intermediate fly frame, the fine fly frame, the speeder, the ring-spinning frame, the mule, the spooler, the warper, and the slasher.

The instructor selects for a lesson a subject which is sharply defined, clearly cut, and distinctly separated from the subjects of other lessons. The subject is usually either a process or a mechanism. By isolating it from related or accessory processes or mechanisms he prepares the way for the conception of it by the pupil in a clear and distinct idea. Throughout the whole of the lesson, including its review, he directs the attention of the pupil to this distinctly isolated subject and guards against the diversion of his attention to any other matter. The part of the instructor, in the lesson, is that of a skillful director and supervisor of the work of the pupils of his class. As in the intense blackness of a dark night an electric searchlight directs and fastens the attention of the onlooker upon every detail of the escaping boat, which alone it illumines, so the instructor directs and fastens the attention of each pupil, concentrates the combined attention of his entire class upon the process or mechanism which is the subject of the lesson. Let us observe them engaged in a model lesson. The pupils have assembled in their comfortable seats. The instructor unrolls the chart for the lesson of the day. Each pupil studies and then copies into his note-book the drawing, the writing, the calculations, the data, which he finds upon the chart. At intervals, during the copying, he stops that he may more precisely appreciate the process, the shapes, the inter-relations, the functions of parts and their mode of operation. When the copying has been completed he leaves his seat, and, going to the machine to which the chart pertains, identifies and continues his study of the process, the parts and their mode of operation. This period furnishes the best opportunity of the lesson for questioning either instructor as to any point which the pupil has failed to work out to his own satisfaction. In the note-book of the wise pupil are promptly written the result of his own observations, discoveries, questionings. Soon the last pupil has completed his copy, the hum of the electric motor is heard, the operation of the machine is witnessed, and the pupils in turn take the place of the usual operative in performing some act of dexterity or skill which relates to the lesson.

While the pupils are studying the chart and the machine, the eye and the mind of the instructor is always upon them. His mind is as free as is possible from their subject of study. They are investigating a process or mechanism, which is a subject of study. He is investigating the characteristics of individual pupils. The most important examination of the notes of each pupil has the discovery of his characteristics chiefly in view. To understand and to mould these characteristics is his most important work. To attempt to mould without thoroughly understanding them would be folly. Said a wise manager, whose mill roof was being laid, of the contractor who was doing the work: "His foreman drives as many nails as any of his men. Unless he sends someone here who will keep his hands in his pockets, there will be a big bill for him or for me to pay." Somewhere in the twenty-four hours, the teacher must have time, must have leisure, to think of, to influence, the characteristics of the individual pupil or the pupil's best capabilities will not be developed and will be lost to the world. Preferably, just before the taking up of a new subject comes the lesson in review. Preferably, by quizzing, the teacher draws out of the pupils the whole story which the lesson was intended to teach. If a pupil has drawn a wrong inference, wise questioning will set him right. More by quizzing than by statement, but certainly somehow, the whole story of the lesson is correctly told in review. The wise pupil revises his notes as the quizzing proceeds. Then all pass to a new lesson and to a new subject.

It is well for this school and for its future that it had as a member of its initial board of trustees and of its committee of equipment a man of iron determination and of large acquaintance with young men and with the manufacturers of the entire country and their needs. The local manager of the largest American manufactory of textile machinery, he was well acquainted with the difficulties which are experienced by young men who desire to enter the textile industries, but who, having completed their studies, lack the practical acquaintance with textile matters which will give to such of them as are without friends an introduction into the business. He was equally well acquainted with the annoyance to the mill manager and with the damage to his business which results from the necessary employment of the best available, but incompetent, subordinates in mills all over America in which cotton yarn is an element of the manufacture. He determined, through the not

yet created instrumentality of the cotton yarn preparation department of the school, to qualify such young men and thus to bring them, the mill managers and their business together. His determination settled the question. He secured the co-operation of his committee and a vote by the trustees of full power for his committee. He secured as gifts, from the Kitson Machine Co., of Lowell, the feeder and the pickers; from the Mason Machine Works, of Taunton, the sliver-lap machine, the ribbon lapper, and the comber; from T. C. Entwistle, of Lowell, the accessory card grinders; from W. W. Cary, of Lowell, shafting and hangers; and from the Lowell Machine Shop, of Lowell, all of the remainder of the magnificent machinery of instruction of this department, amounting in value to thousands of dollars. Not content with this, he has maintained a continuous and active interest in the practical success of the work of instruction. The entire Lowell Machine Shop, the organization of which he is the local executive, has caught the spirit of the undertaking, and has united with him Charles L. Hildreth in the endeavor to insure its success. That so valuable a man as Mr. Hedrick, one so familiar with the "trade secrets" of the organization, should have been released to the school as an instructor is one of the proofs. There is no reasonable request which is made of this organization by this department which is not granted at once without cost.

Once, while revising a course of study for mechanical engineers, I called upon a number of prominent mill managers and put to them the question: "If you could decide what a young man should know after four years of preparation, to enter your employ as a mechanical engineer, what would you have him know?" One replied: "I should not care what he knew. I should take him into my mill and give him a problem to work out which he doubtless had never seen before. If he should solve it with intelligence and success, I should keep him. If not, I should not keep him two days."

The fundamental purpose of the Lowell Textile School is the promotion of manufactures, and very much to this purpose is expected of the best men who shall graduate after having gathered the full preparation which the school can give. But, more than anything in the way of knowledge of textiles, diploma, or degree, the personal characteristics of the graduate student will determine the extent to which he will be capable of promoting manufactures Is he well qualified by nature? Is he disciplined? Are his powers of body, and mind and spirit, under his complete control? Has he a right purpose? Does he shun alcohol, tobacco, and other narcotics, sensuality and profanity? Has he physique, brains, endurance, forethought, judgment, cordiality, courtesy, common sense, good taste, breadth of view, push, dash, persistence, industry, system, integrity, conscience, tact, energy, vim, will-power? Has the school caused the finest characteristics of manliness, which are the most valuable of scholarly attainments, to develop and ripen, while yet the mind is intent upon fibers and fabrics, colors and chemicals, machines and processes, drawings and designs, books and pupils, teachers and trustees?

COTTON IMPORTS.

Speaking of the British trade in cottons with Canada, the *Textile Mercury*, Manchester, says: "A feature of note just now is the presence in the Canadian market of English white cottons which several wholesale houses have imported. For the present this is regarded as more or less of an experiment to see how they will compare with Canadian cottons. The quality is good but the soft finish does not quite suit the Canadian trade As to price, they meet Canadian competition very well even at the present rate of duty, while next year, when the full one-quarter of the minimum tariff comes into operation, the importations of English cottons are expected to be quite extensive."

"The preference of 12½ per cent. given British manufacturers in Canadian markets does not discriminate very severely against the Americans," says the *Monetary Times*, "because the products which we are accustomed to buy in the two countries are, in the main, quite different. As evidence of the fact that the British have not gained what the Americans have lost, it may be cited that the exports of cotton piece-goods, gray or unbleached, bleached, printed, dyed, or manufactured of dyed yarns, and all other kinds of piece-goods from the United Kingdom to Canada in October 1896, were 2,403,400 yards, while in October, 1897, they reached only 2,196,600 yards, showing a moderate decline.

One reason for the depressed state of the trade in the United States, and the accumulation of stocks of cotton goods in New England, according to the Springfield (Mass.) *Republican*, may be found in the lessened exports of cotton piece goods to Canada, which shrank very considerably during recent months. Here are the figures in yards for July, August and September, compared with those of last year, as given by the paper above quoted:

	1897.	1896.
July	1,477,538	3,774,754
August	832,023	4,310,471
September	809,865	3,997,760

The textile journals of the United States are at a loss to explain this marked falling off in trade. The explanation, however, is imple. A year ago the Canadian duty on the importation of cottonades, denims, sheets, tickings, ginghams, and other goods which we are accustomed to purchase in the United States, was 30 per cent. ad valorem. In the new schedule of customs duties that took effect last April, the protection to domestic manufacturers was increased five per cent., and this has better enabled our manufacturers to hold their own against American competitors. Large quantities of cotton piece goods were slaughtered in Canada by the New England manufacturers a year ago in their efforts to maintain the home markets, and there is good reason to fear that a duty of even 35 per cent. may not serve to prevent the same tactics if the stocks now held in Fall River and the New England centres of production cannot be elsewhere sold."

SPRING COLORS.

Among the color cards sent us is one of excellent repute published by the Chamber Syndicale de la Passementerie, Mercerie, Boutons, Rubans. This card has a series of gendarme blues, six in number, from a pale, pearly gobelin tint to a deep, dull blue. These tones are not on other cards. Following these are the rose-pink shades, ending with three old-rose tints. There are two lovely forget-me-not shades among the light blues, and three turquoise shades very strongly green. The usual yellow and orange shades are shown, and all of the cherry and scarlet tones which were in the card that has already been fully described in our pages. The purple and bluish violet shades are represented as before, except a medium blue violet called Aconit. Two genuine reseda shades are refreshing to find among the emerald and yellowish greens. Very rich dark reds are shown and six shades of golden brown and castor modes. The large silk card of Claude Freres gives the greatest prominence to Delft blues and then to mode shades deepening to a dull brown. Gray follows in twelve shades, from a pearl to a slate tone, and then the bright pink and scarlet shades. Yellow, reseda and emerald green, raspberry and cherry red, purple and very light bluish violet are well represented. Royal blue is more conspicuous than the navy shades. There are many light green, pink, blue, and yellow shades shown here that no one notices as the regular series mentioned before contains the favorites. In the now very fashionable yellow the favored shade is variously known as Regent, Orient, and Talouse. A very deep orange in this latter card is called Klondyke, but never was gold as reddish as this shade.—*New York Dry Goods Economist.*

Foreign Textile Centres

MANCHESTER.—The heavy departments appear to be rather slow recently, but the fancy branches are having a better trade. Reports, however, are current to the effect that a large number of hands employed by two of the leading houses in the city are receiving notice. In the lace sections Chantilly is coming to the front, and Valenciennes as trimmings have received a good share of attention. The silk trade is quiet. The use of ramie yarns in the French silk districts is greatly on the increase. The other day a local firm sold 12,000 lbs. of French ramie noils, and they have since been offered a lot of 70,000 lbs, with 5,000 lbs. a week to follow. If noils can be offered in such quantities to one concern, what must the output of ramie yarns be? In this country the trade seems to be comparatively neglected. In the linen branches a fair business is passing. The sales of union goods have been large, and purchases of cotton yarns on Belfast account, for the purposes of the trade, have been on the increase, operations having been hastened probably by the labor dispute in the spinning trade. The decision of the Rochdale and Bolton card-room operatives against arbitration on the terms offered by the employers is the subject of much conversation on 'Change, and by many a struggle is feared. Silver has been firmer, and has had the usual effect upon the Eastern exchanges, as well as upon Asiatic silks, which are a shade dearer. Reference was made recently to the position of the English calico printing trade in relation to foreign competition, and it has been shown by an analysis of official figures that the arrivals of foreign prints in England are very small. There is a table which shows in millions of pounds the value of printed and dyed cotton goods exported from the United Kingdom and Germany for several successive years:

	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.
U. Kingdom. ..	18.2	19.2	18.6	19.2	19.4	19.4	18.6	21
Germany	2.2	2.8	2.8	3	3	2.2	2.6	2.6

As Mulhouse and other important printing centers are now in German territory, the foregoing returns will include many of the so-called French prints sold in this country. The figures, it should be understood, embrace exports to all parts of the world, and have, therefore, special significance. They show that in reviling English and Scotch calico printers for allowing foreign opponents to take trade from them in the home market, certain critics have not been speaking by the book. The German yardage cannot be given, the standard of quantity being weight, not lineal measurement. An eminent economist, who has studied the question closely, estimates the value of German print exports at less than £2,000,000, while that of Great Britain are over £11,000,000. The American export trade in prints is only valued at about £700,000 a year.

BRADFORD.—There is very little doing in the wool market, and the disposition is now to await the London sales. Prices of colonials are, if anything, easier, and English kinds are far from being firm. A fair business is being done in mohairs, and the tendency is to harden, but nothing more encouraging can be registered about the yarn trade, where merchants are still operating in small quantities. The amount of business done in the piece trade is very disappointing, both for home and export, and prospects for the immediate future are anything but satisfactory. There is no improvement in the demand for wool, yarn, or goods manufactured from wool, and the reports from all the consuming centres, both home and abroad, are the reverse of encouraging. Notwithstanding this, the tone of the local market for raw material is certainly firm, and there are distinct evidences of an undertone of strength which makes any giving way in prices unlikely. As stocks of both wool and tops of the fine merino class are still unusually small, and the prospects of replenishing them to any great extent are remote, except at prices on a higher level than has recently been ruling, it will require some months of a very slow demand indeed to shake the position in this class of wool. There is exceedingly little business doing in medium and low cross-bred colonial wools. In English wools, as the best lots of pure lustre wools have for some weeks been quietly absorbed by the mohair and alpaca spinners, this market is now very lightly stocked, and should the demand continue, as seems highly probable, prices of bright wools will be distinctly higher before the next clip time—that is to say, next June. The cheaper classes of home-grown wools, such as Scotch, and the wools from the Western districts, have been taken off the market at quite an average rate, but prices have kept practically at one dead level. The sales of East India wools which have been proceeding this week, and which are of interest mainly to the carpet and low clothing trade, have shown some decline on the previous sale prices. Both raw alpaca and mohair are dearer, and still higher prices have recently been paid for the latter at the source of supply than the extreme advance which had recently been made in Bradford. In dress goods the general trade may be described as quiet, although some fancy makers are very busy with silk effects in tartan checks for quick delivery and some novelties in mercerized. Black mohair jacquards are selling well. For the coming spring, neat coating checks for costumes and lace effects for home wear have been well taken up, but even yet the tendency of fashionable taste is somewhat uncertain.

ROCHDALE.—There is nothing more satisfactory to report in regard to the flannel trade. The mild weather is preventing anything beyond the smallest sorting-up of orders, and such will be the case while it lasts. Notwithstanding this, however, prices keep without change.

KIDDERMINSTER.—The carpet trade is only fairly busy. A good number of orders have come in, or are in sight, but many of them are for delayed delivery. The season is unusually late, and, though looms are getting busier every week, they are hardly as busy as is usual in November. Nothing at all is doing in yarn, so far as buying is concerned. Deliveries are again the turn better. Manufacturers' stocks of yarn are probably low, so that every little improvement in consumption finds a few particulars for spinners. Yarn, however, is taken very cautiously.

NOTTINGHAM.—The curtain branch of our trade has settled down to dullness for a spell. Manufacturers are not fully employed and complain of being handicapped by the higher rate of wages prevailing here as compared with that paid in the outside districts. In bobbinets, on the other hand, there continues to be a large trade done, the goods being wanted for the groundwork of Oriental laces, as well as for veiling and millinery purposes. Stiff dressed nets do not meet with much demand yet. Heavy cotton laces are also quiet, and there is no appreciable improvement to note in fancy silk laces. Irish and everlasting trimmings and Swiss embroideries meet with only a limited inquiry. In the making-up departments a want of buoyancy is apparent, the sale of such goods as mob caps, fancy aprons and collarettes being slow in the home market. Business in falls and veilings is not brisk. In millinery laces fair quantities of the Oriental or embroidered Edelweiss goods are selling, but the competition of manufacturers in Saxony and Switzerland is severely felt. Higher prices are being demanded for them in consequence of the advanced value of the net upon which they are embroidered. Valenciennes also maintain their relative popularity, and certain varieties are in good request. Of most varieties of ordinary cotton laces the supply is more than equal to the requirements of buyers. A few Brabant and Bretonne laces are being disposed of, and there is inquiry for Maltese and torchon lace. Guipure and Malines laces are also selling to some extent. Manchester advices say that Valenciennes have been subject of some inquiry for ship-

ment, and that there has been a good demand for trimming laces. The American demand fluctuates considerably, but is, on the whole, steady. Exports of cotton lace last month amounted to £155,874, making £1,894,112 for the ten months, compared with £1,728,158 for the same period of last year, and £1,670,298 for 1895. Of silk laces the month's shipments come to £6,930 (United States £1,960), making £125,458 for the ten months (United States £52,062), against £139,643 and £115,933 for the corresponding period of last year and of 1895, respectively.

LEICESTER.—The yarn market is in a very sluggish condition, and particulars which come to hand in completion of old contracts are easily met out of stocks. Lambswool and fancy yarns are steady. In hosiery fabrics there is a quiet, healthy trade in one or two specialties, but beyond this the depression is very severe. Australian business, which has been of fair extent, is now closing for the season, but the spring trade is more hopeful. Elastic web fabrics are steady.

SOUTH OF SCOTLAND.—The weaving mills in the East End of Glasgow are only moderately employed. In the lappet trade business has not been so slack for years, and many looms are idle. In the dress department fashions have shown a marked change, and the outlook is anything but promising. However, those mills working zephyrs are exceedingly busy, but their case is exceptional. Plain work is generally slack, and the bulk of the mills hold big stocks.

KIRKCALDY.—The linen trade of the district continues in about the same condition, the recent improvement being maintained, and a pretty fair demand existing for the various descriptions of goods. Floorcloth and linoleum makers are still very busy, the output of goods being large, and fresh orders coming to hand.

DUNDEE.—The market is unchanged. In jute a large business has been done. The sellers, covering in their sales, instantly made the market a shade firmer. Good jute, such as Rallis, Blacks, and Stars, have been sold at about £11 5s. and £12 5s. for the RFC and D 4. The commoner kinds, as well as Daisee, have been offering at very low prices, but buyers are unwilling to risk such qualities practically without any guarantee. The new jute is reported upon in a very conflicting way.

BELFAST.—A fair number of orders have been received, and prices remain virtually stationary. Quietness has characterized the yarn market, and rates, while quotably unaltered, are perhaps a shade easier. Buyers are only ordering what will supply immediate necessities. In the market for brown linens orders have not been quite so numerous as in some recent weeks, but there has been considerable activity, owing to goods recently ordered being delivered to purchasers. The turnover, in consequence, is in excess of that of any late week. The new business booked is not up to expectations, and buyers are operating cautiously, content with satisfying current requirements. Thirty-eight inch power loom linens for bleaching continue in steady request. Makers are reluctant to accept fresh contracts at present prices, as they are well engaged ahead, but buyers are disinclined to advance. A steady trade is passing in cloth for dyeing and hollands at late rates. The demand for damasks is improving, principally in the inferior qualities. Prices are said to be unremunerative, but there is difficulty in getting an increase. Unions are in greater demand, and rates are firm. A steady business has been done in tow-made goods at recent rates. Handkerchiefs are selling freely at very firm prices. Hand-loom linens for bleaching are meeting with a steady demand. Stocks are moderate and prices are steady. In the bleached and finished linen end of the trade, there has been a fairly good week's business, and the warehouses will be well engaged for some weeks in sending out goods ordered some time ago as they come in from the bleachers and finishers. Orders from across Channel are fairly satisfactory for the time of year, and as stocktaking is approaching, buyers are only taking what is needed to satisfy present requirements. Goods of a specially Christmassy character have sold to a larger extent than usual. The apron and pinafore manufacturers are ordering fancy linens to a considerable extent, and it is anticipated there will be a good season's trade in this department. A moderate business has been done in tailoring linens at firm prices. Advices from the United States report that business is fairly satisfactory. Orders, however, coming to hand indicate that the quality of the goods required will be below that of former years. The volume of business is hardly up to expectation. Continental trade remains steady. There is no change to report in business with the colonies, and export trade generally is much as it was. Locally, prices are firm and stocks modera .

LYONS.—The activity which has led to an unusual volume of business is slowly subsiding, although the figures registered by the conditioning house are again far above the average. Actual deals are now confined to the purchases by those manufacturers, who in spite of all warnings of a permanent improvement in the silk industry, failed to provision themselves at an earlier date, and to the buying of grades and sizes whose requirements could not be foreseen with certainty. These together, however, form a considerable volume, on account of the quantity and variety of fabrics for which orders are now being received. The large quantity of silk which continues every week to pass through the conditioning house is due to the earlier contracts concluded at the beginning of the movement. These contracts prove to have been much more important than had been known, and the silk is now arriving from the Far East. Deliveries may continue up to the end of the present month, when a great falling off in the weekly statistics is expected. This will not surprise anybody, and prices will hardly be affected, as the same sentiment which led to the recent activity still dominates the market. The heavy stocks received here consist to a great extent of Asiatic silk, and while no scarcity in these may be expected for some time it is nevertheless true that in Italian and French grades stocks are smaller than is considered desirable, and the firmness which these continue to manifest will remain the feature of the market. Reports are current here which seem to indicate a change in the sentiment in the American market, and orders at low limits which were received lately apparently confirm the impression ruling there that lower prices may be expected. It is, however, being noted that particularly Italian holders remain indifferent to these lower offers, and that the orders could not be filled. The principal consideration influencing the market is the high cost of cocoons, which makes it impossible to replace stocks even at current prices.

ZURICH.—This market remains quiet, but prices are generally maintained; particularly Italian silk keeps firm, and the stocks in the better grades are low. Commission houses with buying orders in hand at lower limits found it impossible to fill these orders, having met with strong resistance on the part of holders, who refuse to consider offers below current quotations. Japan silk was a little easier in price on account of diminished demand; but China silk is as firm as Italian. Cocoons remain much in demand at very high prices, but stocks are visibly growing smaller. There was less activity in manufactured goods, and little can be expected for some time, the mills being filled with orders far ahead, making it practically impossible for them to entertain new contracts. Orders on taffetas cannot be filled by leading houses before April. The activity in ribbons is quite as lively as in silks. Bale is working to the full extent of its producing capacity, and orders can be placed only with an extended time for delivery. The coming year is expected to be one of the best the silk industry has witnessed for quite some time.

CHEMNITZ.—Fancies have now found favor, and are going

like hot cakes at a country fair. Plaids prevail. Roman and Indian stripes go in good quantities and at good prices. Blacks, ox bloods and tans are called for only for English and continental customers. In ladies' goods the Nottingham people here put forth a very pretty fancy, a lady's bike hose, with a top fold or welt. No one has had them here except this firm. Big orders were booked from almost every American buyer. Another novelty is rear, spliced seat or reinforced underwear. This, too, had its origin in Leicester, Nottingham, or Troyes. The Notts people were'nt going in for them at first, till someone said, feelingly, "a very small boy would know better; he could see their value." Well, if anyone on earth would recognize the value of reinforced underwear, the very small boy is that one.

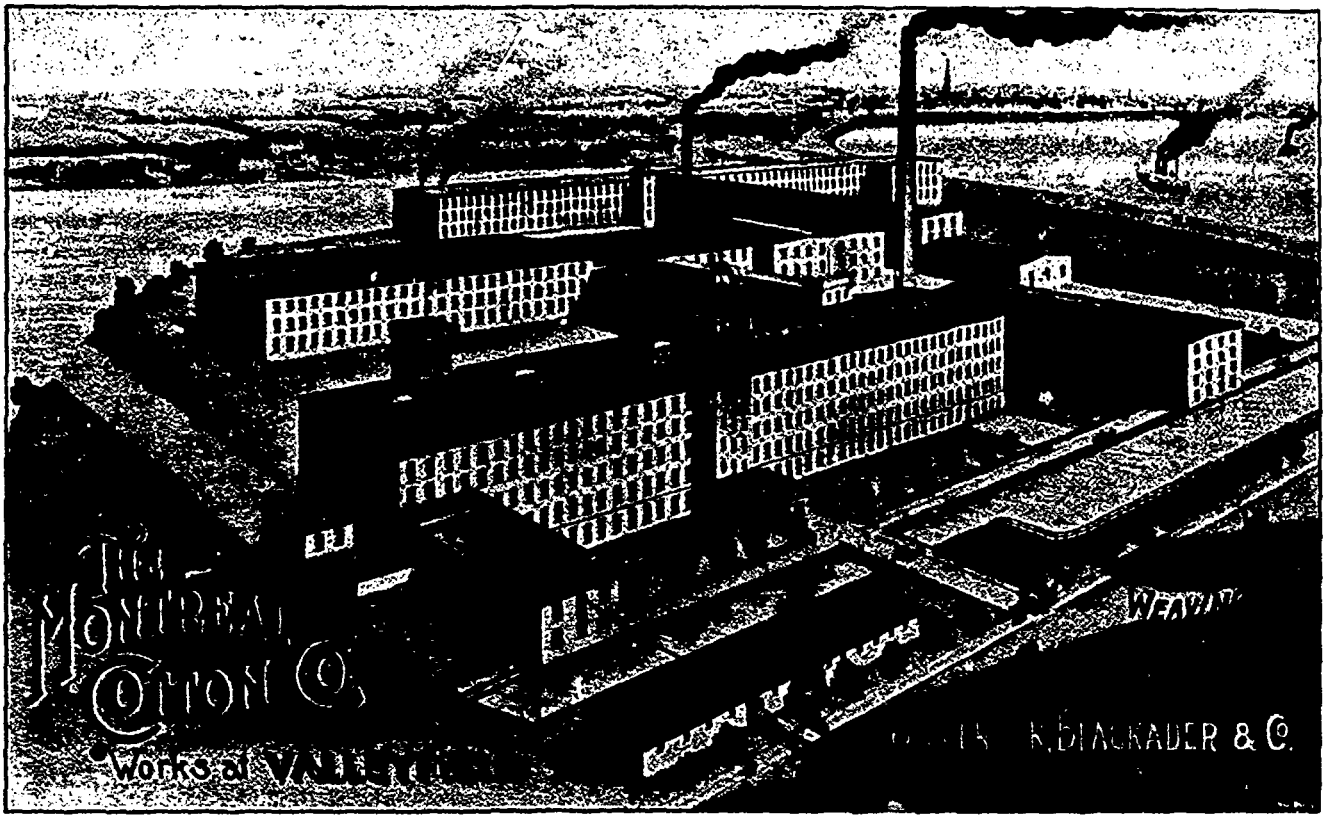
A CANADIAN COTTON MILL.

There is no more pleasant or prosperous town on the banks of the grand old St. Lawrence than Valleyfield, with its busy industries, its contented population, and smiling and comfortable homes. By far the largest establishment in the town is that of the Montreal Cotton Company. Indeed, without this busy hive of industry, Valleyfield could not be what it is, for

MONTREAL COTTON CO.'S INSTITUTE, WITH FOREMEN'S COTTAGES IN BACK GROUND.

out of the total population of 7,000 in the town, 1,500 are directly employed in this cotton mill, while a large proportion of its mercantile business is dependent on the existence of the mill. The Montreal Cotton Company was started about 1877, with 600 looms and corresponding carding and spinning machinery. About 16 years ago, at the time of the extraordinary expansion of the cotton mill business, the capacity was increased to 1,300 looms. The boom in cotton mill building in those days brought the manufacturing capacity of the country up to double the normal consumption, and for some years no increase could be expected on the part of even the most skillful of our home manufacturers. In spite of these adverse conditions, however, the managers of the Montreal Cotton Company have studied the market so carefully, and have so well watched their chances in developing special lines, that we find this mill to-day operating 80,000 spindles, 110 carding engines, and 2,350 looms—the largest weaving capacity of any mill in the Dominion. The company has now a capital of $2,000,000, of which $1,500,000 is paid up.

The motive power of this mill is very interesting, and the electrical features have been the subject of previous articles in this journal. Without dwelling again on this subject, we may say that through the erection by the Dominion Government some years ago, of a dam, designed to increase the depth of the water in Lake St. Francis, a magnificent water power was formed at Valleyfield and purchased by this company. The mill has now 17 large water-wheels, yielding the immense total of 3,600 horse-power. Appreciating the great advantages of electricity in a cotton mill, the company recently planned and built a large power-house, shown in one of the engravings, capable of holding machinery for 2,400 electrical horse-power, of which 1,200 electrical horse power have already been installed. The company owns its own dredging machinery, and to provide for the hydraulic portion of the new plant,

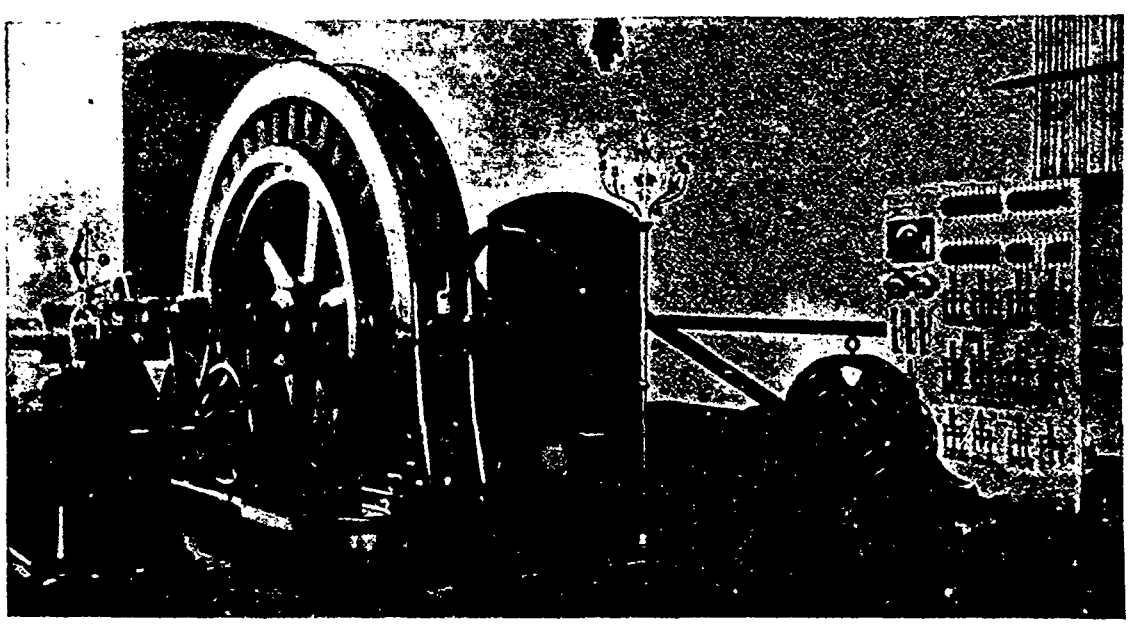


BIRD'S EYE VIEW OF MONTREAL COTTON CO.'S BUILDINGS

excavated a flume out of the solid rock. The lower part of the power-house is built of solid concrete, and the upper part of stone lined with terra-cotta lumber. The whole group of buildings, as shown in the bird's-eye view, is of stone. These structures are probably unsurpassed as textile mill buildings in Canada. The turbines are erected in pairs, each pair driving a four hundred-kilowatt generator. The electrical machinery is of the three-phase type, manufactured by the Canadian General Electric Company. Nine motors are used throughout the different departments for operating special machinery, and the mill has an electric lighting plant, now running 2,000 lights, or nearly its present full capacity. Not only is the mill equipped with its own fire pumps (of which there are two of 1,000 each, and one of 500 gals. per minute, respectively), and two centrifugal pumps for the bleachery, but operates a separate pumping plant for supplying water to the cottage property belonging to the company. A battery of five large boilers supplies heat to the buildings, and steam and hot water to the bleachery and dye-houses, and probably this battery will shortly be increased to seven.

spindles to the capacity of the mill. It may here be mentioned that the Montreal Cotton Company has made great advances recently in its capacity for manufacturing the finer grades of cotton, and can now produce cloth varying in weight from ¾ of a yard to the pound to 18 yards to the pound. This mill now spins yarns as fine as 50's, and uses yarns up to 60's. In other words, the woven fabric of their finest goods will contain 160 threads to the inch, a pound of this fine thread measuring 50,500 yards. To give a further notion of products, it may be mentioned that 270 distinct varieties of cloth are made in this mill, while the number of different patterns in which most of these different kinds can be produced multiplies the variety of output almost beyond computation. These figures are not only eloquent of the possibilities of the Canadian Cotton mill, but they show the exacting conditions of Canadian trade, for those familiar with cotton manufacturing in the Old Country are aware that not only will an English mill be employed on a single species of cloth for months, and perhaps years, but will confine itself to weaving only, leaving the production of yarns and the finishing and dyeing of the goods to other mills that make a specialty of a single process. Indeed the phrase "cotton manufacturer" as there used does not comprise any process other than weaving, the makers of yarns being called "cotton spinners." It will therefore be seen that the carrying on of a cotton manufacturing concern in Canada requires a greater variety of skill and greater application than in the Old Country.

MONTREAL COTTON CO.'S MILLS—SOUTH SIDE.



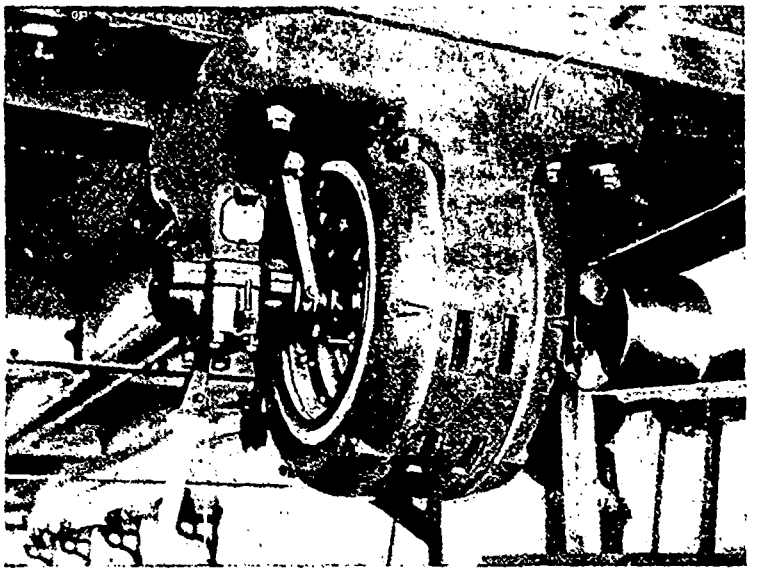
DYNAMO ROOM, MONTREAL COTTON CO.'S—SHOWING SWITCHBOARD, GENERATOR AND WATER-WHEEL GOVERNOR.

To those familiar with cotton manufacturing, a detailed description of each department will contain little of novelty, but it may be mentioned that the management have kept pace with all the latest improvements in preparing, spinning, weaving, and finishing machinery, having several new and ingenious devices for automatically conveying the products of one department to another, and for handling the goods quickly, etc.. Thirty new spinning frames are being installed, adding 7,000

Among the products of the Montreal Cotton Mill are

glazed fabrics and imitation linen goods, in the production of which eight beetling engines and thirteen calendaring machines are employed. Special machinery has also lately been introduced for manufacturing bookbinder's cloth and window shade cloth, the goods turned out in these new lines being highly spoken of by the trade. The bleachery and dye-house has a capacity for treating 120 tons of cloth per week.

One large room is devoted exclusively to Turkey-red dyeing, and another to the production of fast black goods, in each of which specialties the mill has a wide reputation. At the present time 24 Jacquard machines are at work on the production of figured goods, such as figured curtain cloth, imitation figured silks, bed spreads, etc. Seven napping machines are used in the napping department on flannelettes, etc Among the other machinery about to be installed are 200 new looms: and a new mixing room is being built for mixing the raw cotton as it comes in. Raw cotton is now imported from Egypt for the fine counts of yarns, and it requires 175 bales of American and Egyptian cotton to keep the mill running for a week.



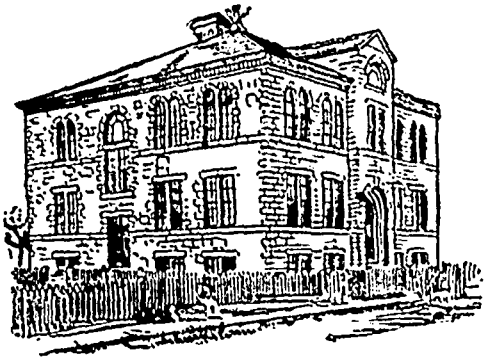
MONTREAL COTTON CO.'S INVERTED TYPE MOTOR.

The establishment has its own machine shop, carpenter shop, box factory, planing mill, dry kiln, and wood-turning factory, and even its own pigments, such as are used in the manufacture of window-shade cloth are ground on the premises. A building 186 feet long by 90 feet wide, and three stories high, is devoted entirely to mill supplies, extra machinery and parts of machines. The orderly and well-filled shelves of castings, pipe fittings, valves and textile machine supplies, remind the casual visitor of the warehouse of a wholesale hardware establishment.

MONTREAL COTTON CO.'S ELECTRIC POWER HOUSE.

The company owns a considerable tract of land in and near the town, and has its own dairy for the convenience of the employees, who appreciate pure milk

Thanks to the munificence of Andrew F Gault president of the Montreal Cotton Company, Valleyfield has one of the best Protestant educational establishments in the province The company gave a grant of land to the value of $6,000, while Mr. Gault paid the cost of the school building and endowed it with $15,000, making a total of $40,000 on his own personal account. The course of instruction embraces a kindergarten, primary school, model school and academy, under the principalship of W J Messenger M A who was Shakespeare gold medalist of McGill University. The academy has a staff of four teachers, but the attendance has increased so much during the present session that another teacher has been advertised for, and a French department has been organized with a French instructor Military drill is also taught by a late officer of the Grenadier Guards. The institution was recently honored with a visit from the Superintendent of Public Instruction, and Bishop Emard, who, with Father Allard, Catholic School Commissioner, complimented the school on its efficiency. This school, it may be mentioned took the second prize awarded by the Provincial Government last year for the best kept school and grounds.



THE GAULT INSTITUTE, FOUNDED BY A F GAULT PRESIDENT MONTREAL COTTON CO

The management of the mill are not unmindful of the social condition of its employees, and each year prizes amounting to $25 are given for the best kept gardens among the employees.

Still another, and by no means the least admirable feature of this establishment, is the club or "Institute," which is open for membership to the employees of the mill. As a matter of interest to other manufacturers who may take this as a model, we give a copy of the constitution and by-laws of the Institute :

The Montreal Cotton Company, in the interest of education and for the purposes of recreation, permits the use of the above grounds, buildings thereon, and contents thereof, free of all charges, to such persons as shall have conformed to the following Rules and Regulations:

The directors of the Montreal Cotton Company reserve to themselves the right, at all times, to withdraw their permission, which permits the use of their property for the purposes aforesaid, and claim the right to close up the grounds and buildings with or without notice should circumstances so warrant.

1. The members of this Institute shall be the members who at present are on the list of members, being in good standing.

2. New members can only be elected by ballot at a meeting of the committee, one black ball in three to reject. But the name and occupation of the member proposed, and the name of the member proposing, must have been entered in a book provided for the purpose, at least one week before the last Friday in each month, and the member proposing must have paid to the secretary-treasurer the proposed new member contribution to the expenses of the current quarter or balance of that quarter, which sum will be returned should the application of the proposed member be rejected.

3. New members must be in the employment of the Montreal Cotton Co., but the committee may by an unanimous vote elect as members persons not in the employment of the said company, but such member cannot serve on the committee, nor shall he be entitled to register his vote at any annual or special meeting.

4. The affairs of the club shall be managed by a committee of president and eight committee men. The president shall at all times be the general manager of the Montreal Cotton Co., who in case he is absent or unable to attend, or is not desirous of attending to the duties of the said office, may appoint a deputy to act for him.

The eight committee-men shall be elected by the members, four at one annual meeting and four at the next annual meeting. The retiring members of the committee shall be eligible for re-election.

The committee shall at their first meeting after the annual meeting elect one of their members to act as secretary-treasurer.

Should any committee man resign his position in the committee, the committee shall elect some one of the members of the Institute in good standing to serve in his place for the balance of the term.

5. The committee shall meet for the transaction of business, every last Friday in the month, or on any other day appointed by the unanimous resolution of the committee, the date so determined shall be posted up in the Institute. The committee shall meet in the committee room of the said Institute. The president may at all times call a special meeting by individual or general notice posted up in the Institute.

6. The annual meeting shall be held on the evening of the first Friday in May at the hour of eight o'clock. At this meeting a report shall be submitted by the secretary-treasurer, which report shall have been audited by the elected auditors, giving a statement of accounts. The meeting shall then proceed to the election of four committee men to replace those retiring, to the election of auditors for the coming year's statement, to the election of librarian, and to the consideration of such business, both ordinary as well as special, as may be brought forward.

7. For the purpose of providing a fund for keeping the grounds and the premises clean, also for the purpose of providing for the necessary heating, lighting, and the other incidental expenses of the Institute, each member shall pay to the secretary-treasurer seventy-five cents per quarter, such payment being due in advance on the first Saturday in May, August, November and February in each year. Any surplus from this and from any other special funds shall be used to augment the Library, or shall be used in the maintenance of the literary department.

8. For the purposes of providing a fund to secure the proper maintenance of the implements, articles, and other materials required for the enjoyment of any special game or pastime not enjoyed in common by all the members of the Institute, the committee may permit the members to collect a levy from those who play at or enjoy such games and pastimes by or through the use of such implements, articles or other material. The amount so raised shall be paid to the secretary-treasurer, and shall be expended by the committee to keep such implements, articles and other material in good repair, and any balance left in hand after the payment of such repairs shall have been made, shall be expended as previously provided.

9. No member shall be allowed to play at any game for money, nor shall he use profane, lewd, or indecent language, nor shall he spit upon the floor of the Institute, nor shall he in any way act so as to be offensive to his fellow-members. The committee may, upon proof of any breach of this rule, suspend, or at their discretion dismiss such offender from membership.

10. No dogs are allowed to be brought into the Institute, nor into the grounds thereof.

11. Members may introduce friends into the Institute under the following conditions:

(a) Their names with their respective addresses, and the name of their introducer must be first entered into a book kept for this purpose.

(b) Visitors living in the town of Valleyfield, or in the parish of St. Cecile may only be so introduced by any one member twice during any one year.

(c) That the member introducing makes himself responsible for the behavior of said visitor or visitors, as well as for all expenses incurred by him or by them.

12. No intoxicating liquor shall be sold, nor shall any be allowed in the Institute or on the grounds.

13. The committee may from time to time issue such regulations as they may deem necessary to govern the conduct of the members of the Institute whilst they are using the Institute or the grounds thereof.

MONTREAL COTTON CO.'S MILLS, OFFICE SIDE.

The Institute now numbers on its rolls about 140 members. The Institute itself consists of a billiard-room, containing three billiard tables, a reading-room to accommodate about 20 readers, a card-room, containing 10 card tables, and a library of upwards of 1,000 volumes. It has also a skating rink, a bowling-green for English bowls, two lawn tennis courts, and a double quoiting ground. In the building, of which an engraving is here shown, there is a bath-room, which contains two baths with hot and cold water. The walls of the Institute are covered with colored lithographs, nicely framed, being chiefly the colored pictures published by the English illustrated papers at Christmas and New Year, as reminders to many members of familiar scenes in the old land. The literary and athletic departments of this institution are both equally well patronized, and its organization is a monument to the thoughtfulness and generosity of the management.

The present manager of the Montreal Cotton Company is Louis Simpson, who, whilst managing the Nova Scotia Cotton Company, some ten years ago, was offered the management of

the Valleyfield mills, then not as large as they are now. During the ten years Mr. Simpson has been manager of these mills, the product of the mills has more than doubled, and many descriptions of cotton goods never before manufactured in Canada have been added to the mill's productions. At the late Chicago Exhibition, where the Montreal Cotton Company exhibited some of their goods, American experts refused to believe that the goods were made in Canada, but thought they were the production of an English mill. As the Montreal Cotton Company do all their own repairs, building extensions, etc., the life of the general manager is a very busy one, but he has had the wisdom to surround himself with a very efficient staff of assistants. Mr. Simpson is an Englishman, born near Manchester, and comes of an old Lancashire family, who have been interested in many branches of the cotton business since the early part of the century. Although hardly of middle age, he has held the management of mills for over 25 years.

The directors of the Montreal Cotton Company have lately donated to the Valleyfield Amateur Athletic Association the free use forever of 16 acres of land known as the Queen's Park, so long as it is used for athletic sports, and certain of the citizens of Valleyfield have donated $1,500 worth of shares in the Queen's Park Co. to the same association, so that the young men of the town can have a suitable ground on which to hold lacrosse, football, baseball, bicycle races, etc.

THE ARTISTIC TEXTILES OF BURMA.

The dry goods trade, like all others, welcomes every *oportunity to exploit a new field which promises to give it* something different from the rest of the world, or the same thing in better quality or at lower prices. It is too soon to say that a good "find' has been made, but attention has recently been drawn to a country almost unknown commercially to the readers of the *Dry Goods Economist*, and by no means familiar to even the most venturesome and energetic "globe-trotter." A book entitled "Picturesque Burma," original in part, but largely compiled by Mrs. Ernest Hart, an English woman, and published by the J. B. Lippincott Company, gives a good deal of interesting information about that country, and, of course, touches upon the fabrics in a way to appeal to her women readers.

While the export trade of Burma in textile fabrics is, as yet, practically nil, there seem to be possibilities of developing the loom industries into something like appreciable proportions, if the efforts of the British Government to encourage them be successful, and if those efforts continue to receive the assistance of the merchants and manufacturers in establishing technical training schools and an organized system of help. All who are acquainted with the country agree in saying that those efforts will prove to be largely remunerative both to the workers and to the promoters. It is possible even now for our importers to bring from Burma certain fabrics, embroideries especially, which would surely appeal to persons of wealth and refinement as being extremely useful for decorative purposes. They would probably not be very cheap at first, but for some time certainly they would possess that novelty which appeals to the aesthetic taste of so many

Before discussing the possibility of this trade in general terms, it is well to give some exact information as to what may now be advantageously imported from Burma.

There are the "Pasoh," worn by the men, and the "Tamein," worn by the women. The best of the former are made of silk woven in bright colored checks and stripes in one piece about 1¼ yards deep and 6 yards long; the latter is similar in shape and somewhat so in the manner of weaving, but of different dimensions, being perhaps 50 or 60 inches broad and longer than it is broad; the upper part is made of a dark cotton material, the middle third consists of a beautifully-woven silk damask in brilliant colors and conventional design, and the lower third, which sweeps the ground, while also of silk, is of a plainer pattern, generally in stripes and woven in lighter colors to harmonize with the rich damask of the center. The effect is very pleasing, and the tameins of ladies, who take great care to have them woven in tones and blends to suit their correct taste, are charming examples of the art and skill of the weaver.

The men wind the pasoh round the hips, one end being tucked in in front and the remainder gathered into loose, graceful folds, or thrown, scarf fashion, over one shoulder They wear a short jacket of white cotton cloth, and in winter, or on occasion of ceremony, a long white coat, which is sometimes fur-lined. The women wind the tamein tightly round the hips and tuck in one end, and usually wear inside it a kind of petticoat and shift, in one piece, of white cotton cloth, which is fastened above the bosom. A bright-colored scarf is worn across the shoulders and is folded round the throat when the chilly morning mists lie low. It will be seen that if the cloth from which the men's pasoh is made be woven in pieces of greater length, it may be useful for dress goods, while the tamein of the women can hardly be used for any other than decorative purposes. But it is the hangings embroidered in gold and silver thread, enriched with spangles and cut-glass jewels, which at present offer the chief inducement to importers as being peculiarly Burmese. The designs generally represent dancing figures surrounded by well-drawn decorative borders. They are all quaint and attractive, and can be used in a variety of ways.

The construction of the native houses, palaces, and theatres of Burma dispensed almost entirely with outside and partition walls, and therefore hangings became an important factor in furnishing as well as decoration. These are woven of silk and are ornamented with the most exquisite embroidered work. The pen picture which Mrs. Hart draws of the Burmese women weaving these fabrics is a very pretty one: "Under the shadow of papaya and palm trees women were winding and spinning bright-colored silks on spindley bamboo wheels chatting and singing as they worked. Beneath thatched shelters, placed against the toylike houses, girls were busy with numerous tiny shuttles weaving brilliant damasks of crimson and pink, or blue and green, with silver, not by means of a noisy Jacquard loom, but by deftly passing the shuttles in and out of the silken warp." The designs produced by this method of using the numerous shuttles, sometimes as many as a hundred on a piece of cloth not more than 20 inches wide, is similar to those seen in the very effective Japanese material known as "Suzuri." Mrs. Hart also says: "I have been surprised at the beautiful and dainty fabrics which I have seen being woven on primitive hand looms standing in the open or under a thatched shelter."

The brilliant crimson, blue and pink silk yarns are not the result of native dyeing, for both these and the silver thread are imported from China and sold by the Chinese merchants in the bazars.

Agriculture and sericulture are the only fundamental sources of textile fabrics which can ever be of importance in Burma, for the climate is so hot as to restrict the use of woolen materials to a minimum, and there cannot be much inducement for the natives to undertake the raising of animals for shearing. It should be stated that the climate of Burma is not nearly so trying to Europeans as is that of India. Several fibrous plants can be easily cultivated, and the cloths from them are likely to become more popular with the people than they now are. The area of cotton land is, however, small, and most of the cotton cloth is brought in from China, a little (there might be more) being received by direct importation from England. None, apparently, goes to Burma from the United States.

But there are great possibilities for silk culture even if the silk at present grown be coarse in fiber and inferior in quality

Although the greatest part of the country is within the tropics, it is a cause of constant surprise to all travelers to find so many of the fruits of the temperate zone growing wild—not at high altitudes, but in the forests of the lowlands. The mulberry can be satisfactorily grown along the foothills of the several ranges of mountains, and the British Government is making earnest endeavors, by holding out attractive inducements to cultivate silkworms, to persuade the farmers to abandon their primitive methods and to settle down to a permanency they have never yet known. It is rather an uphill job, though, for the natural indolence of the Burman is supported by his disposition to adhere to the strictest tenets of Buddhism, which forbid taking the life of even a silkworm. There is even now, however, one tribe of mountain people, called the Yabehns, who seem to be free from this religious objection to taking life, they are engaged in the industries of silkworm raising and silk winding, and these are gradually increasing throughout the land. With the native taste of the people for bright, pretty fabrics, the cheapening of the cost of raw materials will have a stimulating effect upon the weavers, and it seems to be worth while looking into the silk goods trade of Burma.

IMPROVEMENTS IN STOCKINGS AND SOCKS.

A German manufacturer has patented an improvement in stockings and socks. This is essentially a double stocking, etc., consisting as it does of two stockings, an external one and an internal one, secured together so as to prevent the displacement of either of them. These are produced by first knitting a stocking with the leg shorter to allow for a top band to be added, this forms the inner stocking. A double top is used, and the top of the first stocking is joined to the two ends of this top, and another stocking is then worked to the same top to form the outer stocking. In the case of half-hose with rib tops, the inner sock is made as before, without the top, the top of this stocking and the rib top are hung on to the needles and the second stocking made as before. In circular stockings, two stockings, one inside the other, are used, joined at the top. The two stockings, besides being joined at the top, may be joined at other convenient points of the foot, preferably at the extreme end of the heel, and end of the toe. As shown, the above double stocking may be circular or made fashioned on the straight bar frame.

An English protected improvement is a stocking having the leg fully fashioned, as would be made upon a Cotton's patent, or other rotary frame with fashioned apparatus. The heel, foot bottom, and toe, being of the seamless type, similar as are made upon knitting machines with reversible action. The object of this is to produce stockings, etc., with fully fashioned legs and wrought insteps, and the heel, foot bottom, and toe, made on a seamless machine. The width of the foot is reduced by the narrowing of the wrought instep to the desired width, and so a shapable foot is made by this improvement.

Another English improvement relates to a cycle hose, or such stockings as are worn with knickerbockers or breeches. The patentee here claims a stocking double at the upper part of the leg, the inner part being drawn up over the knee, allowing of the knicker being drawn down over this, while the outer portion of the stocking can be drawn over the knicker band, and turned down or rolled in the manner worn. This improvement keeps the leg secure from nakedness under any circumstances The altering of present stockings is claimed by the introducer.

The Slingsby Manufacturing Company, Brantford, Ont., recently shipped a large amount of heavy tweeds to Australia and a consignment of heavy blankets for the Yukon.

HYDROGEN PEROXIDE AND SODIUM PEROXIDE.

Peroxide of hydrogen, which comparatively recently was a mere laboratory curiosity, now plays an important part in bleaching, and seems destined to a still more important role. In cotton bleaching it is only a question of price that prevents it from being a formidable competitor with chloride of lime. The universal tendency of much-used drugs is to fall in price as manufacturing processes are improved and cheapened, and the field for peroxide of hydrogen in cotton bleaching will most certainly be widened in the course of time. As it is, in many cases there would be an advantage in half bleaching heavy goods with chloride of lime and finishing with peroxide, says a writer in the *Dyer and Calico Printer*. For fine cotton goods, such as laces and muslins, peroxide is much preferable, and in laundry bleaching it has been pointed out that the use of this agent approaches most nearly Nature's own bleaching process with nascent oxygen, and that, therefore, the term "artificial grass bleaching" might very well be applied to it. Very good results in bleaching calico are got by Horace Koechlin's method. For about 100 lbs. weight of cotton cloth the bath is prepared with:

Caustic	20 lbs.
Soap	60 "
Calcined magnesia	10 "
Peroxide of hydrogen of 12 vols. strength	11 gal.
Water	22 "

The goods are boiled in this for six hours, washed through sulphuric acid at 3 deg. Tw., and washed again. The calcined magnesia is added to the bath to prevent the too rapid decomposition of the peroxide.

In wool bleaching also, a very pure white is got with peroxide, and the advantages of the process have to a certain extent recommended it to the woolen bleacher in spite of the somewhat increased cost. Moreover economy may be studied by bleaching with peroxide and finishing off in the sulphur stove. The process is gaining more favor every year with woolen bleachers. Formerly the general method for wool was to steep it in an ammoniacal solution of hydrogen peroxide, wring out and dry in the air. This process has been improved upon by the use of sodium peroxide, manufactured by the Aluminium Company, Limited, for whom Messrs. William Burton & Sons, of Bethnal-green, are the sole agents in the United Kingdom. The lessening of the cost of peroxide of hydrogen, and the greatly improved processes hit upon to utilize it to the best advantage and without waste, are due to this latter firm. The general process for the production of whites, whether for wool, silk, cotton, linen and mixed goods, in fact almost all textiles, whether in the raw state, yarn, or fabric, is as follows: For the first 100 to 150 lbs. of material the bath is prepared with—

Cold water	100 gal.
Sulphuric acid, SG. 1.840	8 lbs.
Phosphate of ammonia	3 "
Sodium peroxide	7 3-4 "

The sulphuric acid should be prepared from brimstone and the ingredients are put into the bath in the order as stated above. For the second 100 to 150 lbs. of material the bath is brought up to strength by the addition of:

Cold water	8 gal.
Sulphuric acid	2½ lbs.
Sodium peroxide	1 lb. 14 oz.

If the bath after being strengthened shows an acid reaction, a little liquid ammonia is added, just sufficient to give a slight alkaline reaction. If the bath is not too dirty after the second batch is lifted, it may be strengthened in the same way for a third, and possibly for a fourth batch.

Patterns 135 and 136 on our supplementary sheet show the results of bleaching woolen stuff with sodium peroxide by the above process. Pattern 135 is the wool before treatment, pattern 136 the same piece after treatment. This has not been

tinted or blued, but is the result of the bleaching. It is a very pure white, but in some cases it may be necessary to use a stronger bath. In this case the following proportions should be employed:

Cold water ....100 gal.
Sulphuric acid..... .... 16 lbs.
Phosphate of ammonia..... .. .. 3 "
Sodium peroxide..... .. .. 13 3-4 "

The bleaching bath may be of white wood, teak, earthenware, stone, or enamel; but no metal, excepting lead, must come in contact with the bleaching liquor. For heating, an indiarubber tube affixed to the ordinary iron steam pipe answers the purpose very well, but the most substantial arrangement is a coil of lead pipe affixed to the interior of the vessel. If the bleaching operation is interrupted and the bath required for a future operation, it should be made slightly acid with dilute sulphuric acid to prevent the evolution of the oxygen. When required for use again it is made faintly alkaline as before with the liquid ammonia. The temperature at which the bleaching is conducted and the time occupied are regulated by the material to be treated. A warm bath, which in most cases is advisable, works quicker than a cold one. Three to twenty-four hours is the usual time allowance. For wool, felt, etc., a temperature of from 80 to 100 deg. F. is recommended. For silk it is well to commence at 130 deg. F., and after some hours raise to 180 deg. F. The material must be well scoured before entering the bleach bath, and in this it should be loosely packed so as to allow access of the liquor to every part of it. In the case of piece goods these should be continuously passed through the bleach liquor. On lifting it is absolutely necessary to give a thorough rinse in warm water, and a mild soaping in a neutral soap bath is recommended. The process given above may be very advantageously used as a preparation for dyeing light shades. In silk bleaching, whether for whites or as a preparation for dyeing, peroxide is now very strongly recommended. As we have said, the process above is suitable for this fiber also. Lunge recommends treatment with peroxide of hydrogen after stoving. This destroys the sulphurous acid retained by the fiber, and increases the purity of the white. Peroxide is also used almost exclusively now in bleaching feathers, is indispensable in bleaching straw, chip, etc., and is largely employed in bleaching bone, ivory, and vegetable fibers.

The garment dyer and cleaner will find peroxide of sodium of the utmost service to him in stripping colors for re-dyeing. It is by far the safest agent that he could use, and gives most excellent results. The bath in this case is made up of:

Cold water.. ....25 gal.
Epsom salts..... .... 2 lb. 6 oz.

The goods are then entered, saturated, and lifted, and then—

Sodium peroxide..... ... ... 1 lb.

is added. This bath will destroy the original color sufficiently to admit of re-dyeing a comprehensive range of shades, and the danger of tendering the goods is reduced to a minimum, which is a highly important consideration for the dyer and the cleaner. In every case, whether for bleaching or for stripping, the sodium peroxide is added slowly with continual stirring, and care must be taken that it dissolves thoroughly. This is a most important point. The goods are first cleaned in the usual manner, special care being taken to remove all grease. The bath is then heated to about 100 deg. F., and the goods are entered and worked until sufficiently stripped. The efficiency of this process as applied to stripping heavily-dyed woolen material is shown in patterns No. 137 and 138. The former of these is the cloth dyed with a heavy percentage of a fast color, the latter the result obtained by treatment in the sodium peroxide bath. The time taken in stripping off the color varies with the material and the character of the dyestuff used, but it is a simple thing to work to shade. The duration of the operation varies from three to twenty-four hours, this latter being a very extreme case. If the goods have been quickly stripped and the bath is not too discolored, it can be used for further lots, but a long operation will probably have exhausted it. On lifting, the material is well rinsed and passed through water soured with acid. As we have said, the dyer and cleaner cannot possibly adopt a safer method of stripping, nor a more convenient one. A treatment in acid, generally speaking—as, for instance, with the pattern we show—will not bring the color back, nor will exposure, which is sometimes the case after treatment with zinc dust or other reducing agents.

One of the objections to peroxide of hydrogen was its great instability and the easy way in which it lost its strength. Practically this difficulty has been got over, the peroxide is better made, and much more stable than formerly, and several chemists have from time to time recommended additions to enable it to be stocked without serious loss. Sunder lately made a large number of experiments with the object of ascertaining what addition would best preserve it. He finds that alcohol is by far the best preservative. In fact, 2 per cent. of alcohol having been added to peroxide of hydrogen, it loses less than 5 per cent. in strength in 12 days, and about 15 per cent. after 64 days. He concludes, therefore, that the best means of preserving it is to add about 2 per cent. of alcohol and keep it in a cool and dark place. We are informed that these figures have been improved upon in this country, the average loss of strength of well-made hydrogen peroxide after one month's storage being not more than 2 per cent.

FABRIC ITEMS.

W. R. Boyce, clothing, St. Mary's, Ont., has assigned to E. T. Noyes.

F. W. Radford has been appointed curator of the estate of Thouret & Co., importers of dry goods, Montreal.

R. Simpson, head of the great departmental store firm of The R Simpson Co., Toronto, died in Toronto, December 14th.

J. H. Jacob has registered as proprietor of the British Importing Co., Montreal, importers of woolens.

At the London sealskin sale, Japan coast skins brought $10 10 Copper Island, $11, and Behring Sea, $11.50 This is 20 per cent. higher than the last sales, and will cause the sending out of many schooners that would otherwise remain in harbor.

A demand of assignment has been made upon Trahan & McNulty, dry goods dealers, at St. Hyacinthe, Que.

J. T. Chisholm, dry goods merchant, Windsor, N S., another of the victims of the late fire in that town, is seeking a compromise and offering 40 cents on the dollar. He had a stock of some $18,000 or $20,000, with insurance of about $12,000, and saved nothing.

Conrad Vallee, C. Vallee & Frere, dry goods merchants, Montreal, has assigned at the demand of De Blois Thibaudeau, accountant, with liabilities of a little over $20,000. The principal creditors are Thibaudeau Bros., $5,600; Lonsdale, Reid & Co., $4,700, J. Johnston & Co. $2,900; Gault Bros. & Co., $1,400; Caverhill & Kissock, $1,090; Mrs C. Vallee, $2,800; De Blois Thibaudeau, $666 02, McLean & Co. $486; J. R. B. Smith & Co., $451, Fitzgibbon, Schafheitlin & Co. $562; Kyle, Cheesebrough & Co., $435.

Rudolph & Lusher, wholesale woolens, etc., have registered their partnership as doing business in Montreal. Benjamin Lusher and Rachael Levy, wife of Maurice Rudolph, are the proprietors.

The nominations made at the last quarterly meeting of the Dominion Commercial Travelers' Association are as follows For president—Hon. J. D. Rolland and Max Murdock (James Coristine & Co.) For vice-president—J. T. LeSueur (McArthur, Corneille & Co.), elected by acclamation. For treasurer—Fred Birks (Belding, Paul & Co.) and T. L Paton. For directors—William Brewster (Caverhill Learmont & Co.), John E Wright (Doull & Gibson), J. G. Lanthier (Dawes & Co.), Gus Harries (Greenshields, Son & Co.) and Geo. A. Mann, all elected by acclamation.

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.

S. Syer, Port Hope, Ont., intends to add spinning machinery to his carpet factory.

J. H. & G. A. Shaw, textile commission merchants, Montreal, have dissolved partnership.

The Norfolk Knitting Mills, Port Dover, Ont., are running full time, with orders ahead.

The Hastings Hat and Cap Manufacturing Company is a new enterprise in operation in London.

The Beeton Hosiery Co. will put in one set of woolen machinery, and erect a dyehouse at close of present season.

Wm. Thoburn, Almonte, Ont., has recently installed a broad press and other finishing machinery in his flannel mill.

It is said that Jas. H Wylie, Almonte, Ont., will start up the old Baird mill which has been closed for over two years.

The shoddy and twine mills of M. B. Perrine & Co. at Doon, Ont., were destroyed by fire, December 7th. Loss, $50,000.

The Kootenay Steam Laundry Co., Nelson, B.C., is putting up a two-story building, stone basement, 180 by 60 feet wide.

M. S. McKay, Galt, Ont., saved one mule from the fire which destroyed his factory, and he is starting up a one set mill in Galt.

James Lockhart, Son & Co., Toronto, have been appointed agents for the Newburger Cotton Co., Granada, Miss., exporters of cotton.

Jas. H. Wylie, Almonte, Ont., the Elmsdale Flannel Mills, has orders ahead, which will keep the mill running full for some time to come.

The woolen mill of Dufton & Sons, Mitchell, Ont., was recently broken into, but no booty was secured by the burglars, who were disturbed.

Resolutions condemning the sweating system were carried at some of the political meetings held during the Centre Toronto election campaign recently.

John Hope & Co., Lachute, Que., are running overtime. The firm expects shortly to increase the capacity of the factory by about one hundred per cent.

W. Talbot has organized a new company, with English capital to manufacture Axminster carpets in Elora, Ont. The factory is in the old foundry building.

John Morison, Chambly, Que., with his son, A. M. Morison, manager of the Hawthorne Woolen Co., Limited, Carleton Place, Ont., recently visited Almonte.

The Dominion Brussels Carpet Co., Elora, Ont., is very busy, being ordered full till April. The plant will be moved from Elora to Sherbrooke, Que., in May.

C. Kingsley, overseer of spinning, Stormont mills, Cornwall, Ont., has a son aged 17, who is a musical prodigy. He plays all kinds of music on all kinds of instruments.

It is now five years since the Streetsville, Ont., woolen mill closed down and the machinery is still unsold. There are no indications apparently of the mill being opened.

Negotiations looking towards the moving of the Toronto Carpet Co., to Dundas, Ont., are off, and Kingston, Ont., is now mentioned as a possible site for the company's factory.

A by-law to grant the Toronto Rubber Shoe Company a bonus of $6,500 has been almost unanimously carried in Port Dalhousie, Ont. The vote stood 115 for and only 11 against.

A. & J. Clark, woolen manufacturers, Bullock's Corners, Ont., are putting in a ditional broad looms, and will make blankets exclusively in future, having given up the production of druggets.

The Royal Paper Company has placed an order with Richard Smith, manufacturer, Sherbrooke, Que., for a new paper machine to be put up in their new pulp mill at East Angus, Que.

R. Schofield, textile machinist, Toronto, reports business as being good in his line. In fact, Mr. Schofield says he has ceased to hunt for contracts, and has all he can do to keep up with the orders in hand.

T. A. Code, Perth, Ont., will remodel the mills of R. Gemmill & Son, whose purchase we mentioned in our last issue. Wide machinery will be put in at once. The mill already has four Knowles looms.

Mrs. Coveney, Carleton Place, Ont., has gone to Collinsville, Mass., where her husband has a good position in the large woolen factory of which J. M. Masson, formerly of Carleton Place, is superintendent.

The Canada Paper Co., Montreal, is building a new mill at Windsor Mills, Que., the capacity of which will be 35 tons per day. The company expects to have the mill in operation by the end of the present year.

Andrew G Dunlop, of Philadelphia, was recently on a visit to his father, John Dunlop, Almonte, Ont. Mr. Dunlop is now a traveler fo the Weir Thread Co., Fall River, Mass., and was formerly on the staff of the Rosamond Woolen Co., Almonte.

The felt factory in connection with the Government school, at Fort Qu'Appelle, Assa., was burned to the ground early Nov. 27th. Owing to a favorable wind the other school buildings were saved. The loss is about $5,000. The factory will not be rebuilt.

The firm of Bellhouse, Dillon & Co. manufacturers' agents and merchants in dyestuffs and chemicals, Montreal, report that the Canadian textile manufacturers are exceedingly busy, so much so that they can scarcely fill the orders as fast as they come in from the mills.

As a result of the failure of Jas. A. Cantlie, Montreal, Peter McDougall, Roseбank, Ont., had to suspend operations in his factory for a time, but we are glad to know that Mr. McDougall got a satisfactory settlement, and is preparing to set the wheels humming again. —*Almonte Gazette.*

Teetzel & Harrison, Hamilton, Ont., have issued a writ on behalf of Talbot, Cockcroft & Harvey, Elora, Ont., against the London Guarantee and Accident Company, to recover $2,200, the amount of judgment and costs awarded against the plaintiffs in the action of Edward Everitt against them for damages for injuries.

The well-known firm of Jack & Robertson, 7 St. Helen street, Montreal, have been appointed sole agents in Canada for Francesco Basso & Co., the well-known sumac curers, of Palermo, Sicily; Scottish Alum Co., Glasgow, alum (lump and ground), sulphate of alumina, etc.; also for the White Star Alkali Co., Liverpool, manufacturers of powdered caustic soda (all strengths), borax, bleaching powder, sal soda, soda bicarbonate, bluestone, epsom salts, carbonate of potash, etc., etc. They keep in stock a full line of above manufacturers' articles.

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.

Tolton & McKay, Galt., Ont, have started a shirt factory in Hamilton.

It is reported that the cotton mills in Brantford, Ont., are to be removed to Three Rivers, Que.

T. H. Taylor & Sons' woolen mill, Chatham, Ont, was entered by thieves a short time ago, but nothing was taken.

A small strike occurred among the weavers in the Paton Manufacturing Co.'s mill, Sherbrooke, Que., last month.

The proposition to establish a carpet industry in Brantford has been rejected. The city was asked to take $60,000 stock.

James Dock, late of Houston's woolen mill, Ottawa, has returned to Invisville, Ont., for the winter.—*Carleton Place Herald.*

Senbeil Bros. expect to begin operations in their felt factory, Brandon, Man., at an early date. F. H. Hessen will be manager.

Irving & Pye, Sundridge, Ont., are negotiating with the town of Thorold for the transfer to the latter town of their woolen mill. Either a bonus or subscribed stock is required.

The wool and cotton storehouse in connection with the Markham woolen mills, Markham, Ont., was burned to the ground, November 25th, with all its contents. It is insured for $2,500.

The will of the late D. M. Fraser, Almonte, Ont., has been filed in the Surrogate Court, Perth, Ont. Mr. Fraser left an estate valued at $50,000, equally divided between real estate and personal property.

Richard Wray, London, Ont., was visited at his residence recently, by about thirty of the employees of the Wray Corset Manufacturing Co., who presented him with a gold watch, suitably engraved, and an address.

The Watson Mfg. Co.'s Knitting Mill, St. Catharines, Ont., will be run in future in connection with those controlled by the Penman Mfg. Co., and will, it is stated on good authority, be practically part of the Penman system.

J. H. Walker, for many years manager of the Toronto branch of the Canadian Rubber Co., has gone into business on his own account as a special agent for the sale of rubber goods of all sorts. His office is 88 Bay street, Toronto.

The binder twine factory at the Central Prison has been refitted, but operations will not be commenced until the Ontario Government grants the contractors permission to amend their agreement by introducing rope-making, which will necessitate several changes in the machinery used.

Gerald A. Dillon, of Messrs. Bellhouse, Dillon & Co. has gone to Spanish Town, Jamaica, West Indies, where he will remain for four or five weeks at the works of the West Indies Chemical Works, Limited, manufacturers of extract of logwood, for the purpose of receiving a short technical course in the art of dyeing with logwood.

An Ontario charter of incorporation has been granted to J. Gill, J Smith, F. Biette, G. W. Tillson, E Van N Tillson, J. A Caverhill, W. A. Dowler, V. A. Sinclair, E. Welch, Tilsonburg, Ont., as the Gill Soap Company, Limited, to manufacture and sell pulverized soap and all other kinds of soap, and all kinds of washing compounds and devices for cleaning cloth, wood, metals and leather.

The following advertisement appeared in a Toronto evening paper recently: "News wanted of Albert Parker, aged nineteen years; last heard of at 116 Bank street, Ottawa, Ont., Canada, where he worked for his uncle, Robert Parker, a dyer, but left there for Patterson, and has not since been heard of. His father, W. Parker, care of Editor."

Novelty Tufting Machine Co. v. Spofford.—H. D. Gamble for plaintiffs. A perpetual injunction restraining defendant from using or continuing to use the improved method of making an article of upholstery known as "tufting," and from making the article itself, in infringement of plaintiffs' patent therefor has been granted by Chief Justice Meredith.

An offer of 10 cents on the dollar, to carry with it a discharge, has been made by William Carter, manufacturer of overalls, Bay street, Toronto. Practically all the assets are pledged, so that there is nothing for the creditors to realize on. The principal creditors are the Dominion Cotton Mills Company and the Canada Colored Cotton Company, both of Montreal.

An accident occurred at the Chatham, Ont., steam laundry recently, and Mrs. Nevills, wife of A. Nevills, one of the proprietors, sustained serious injury. She was working at the Troy steam machine, and in some manner got her right right arm caught between the heavy roller In an instant her arm was drawn down to the hot roller which irons out the fabrics, and frightfully burned and mangled.

The Klondyke boom is benefiting several Almonte woolen mills. We understand that Wylie & Shaw are going to run night and day to fill orders received, and that the Baird mill property is being fitted up with the intention of running on Klondyke orders also. The other mills are all running full time, and some of them overtime Altogether the outlook is as bright as it has been in a long time.—*Almonte, Ont. Gazette.*

Annie Knieschewsky, a weaver employed in A W Brodie's woolen mill, Hespeler, Ont., met with a very painful accident while at work in the mills. While leaning backwards against the adjoining loom watching the loom-fixer at his work, the machine she was leaning against was started up by its operator, and caught her hair in the gearing of the head motion, winding it in and tearing a portion of it off, with a large piece of the scalp, also severing a portion of the left ear and loosening the remainder of the scalp from the skull on the left side of the head.

The Empire Carpet Co., St. Catharines, Ont., is now producing from the latest improved power looms and labor-saving machinery a class of carpets which in design, finish and perfection will, it is stated, meet the requirements of the trade. The firm manufactures all of the different grades in all-wool and union, three-ply and art squares, in three and four yards wide, in any length, which are equal to imported goods.

There is considerable interest aroused among the large number of woolen mill employees in Sherbrooke, Que., on account of the adoption by the Paton Manufacturing Company of a system of bonuses to their quickest and best weavers, in order to encourage their hands to turn out good work quickly. The bonuses distributed on Friday for November ranged from $8 downwards. A friendly rivalry has been created, and there will, it is said, be closer contests for the prizes this month.

The Hawthorne Woolen Co., Limited, Carleton Place, Ont., has recently added the following machinery, which will considerably increase the production: Four new Knowles broad looms, one new Davis & Furber mule, one new Davis & Furber rub roll, one new Barker rub roll, made by Goldie & McCulloch, three new Bramwell feeds, three new Apperly feeds, an electric light plant was also added about a month ago. All of above are the latest improved, and the mill is now one of the best equipped in the country. These improvements have been made, owing to the increased demand for the company's goods, and with this increased production, orders on hand will keep the wheels humming well on till spring. A. M. Morison is manager of the Hawthorne Woolen Co., Limited.

Geo W. Ward and Mrs. Ward and family have left Almonte, Ont., for their new home in Alton, Ont., where Mr. Ward has taken his father's factory, which he will run on his own account. If he is as successful there as he proved to be while superintendent for the Almonte Knitting Company, he will soon have a woolen Klondyke, says the Almonte *Gazette*. The friends of Mr. Ward, feeling that they could not allow him to leave without some mark of appreciation, met to the number of twenty-five or more, and presented him with a purse. The proceedings were informal. R. Pollock was in the chair. Many prominent townsmen added their testimony to that of the chairman, all expressing regret at the loss of Mr. W. and his family to the town, and the hope that they may all enjoy a bright and happy future in Alton.

A business man who had an active and honorable career in Toronto, died recently in the person of Robert H Gray. Born in England sixty years ago, Mr. Gray came to Canada in 1850 and lived first in Dundas Coming to Toronto, he entered the Hounsfield ware house on Colborne street, and afterwards he went into business for himself, becoming head of the firm of Gray, Rennie & Co., which was afterwards succeeded by R. H. Gray & Co., then the Gray-Harold Manufacturing Company, and then R. H. Gray & Co., which firm continued in business until the Osgoodby fire, on Wellington street, which totally destroyed stock and warehouse. Of late years he continued to take an interest in the Commercial Travelers' Association, the members of which only last year presented him with his portrait, on the occasion of his retirement from the presidency.

At the annual banquet of the Toronto branch of the Canadian Association of Stationary Engineers held last month, F H. Leonard, of the Toronto Electric Motor Co., in the course of a speech said that he did not feel at home in discussing questions of manufacturing outside his line of business, but on the subject of electricity he could say that there never was a time when so many important electrical developments were being made as within the past few years, and the progress made by Canada would surprise even many who are quite familiar with the subject. In Montreal, for instance, the electrical developments were second only to those of Niagara. The Lachine Rapids plant, just finished, and the Chambly plant, now in process of construction, were great electrical works which would advance the industries of Montreal in a wonderful way. For instance, a development in which he was personally concerned, was the transformation of the large steam plant of the Hochelaga mill, of the Dominion Cotton Mills Co the largest cotton mill in Canada—into an electrical plant. The mills were at present operated by three steam engines, aggregating 1,800 h.p., and these were to be replaced by a plant of 1,500 electrical h.p., the power being conveyed to the mills from the Lachine Company's power-house and transformed at the mills, where it would be distributed over the various departments of carding, preparing, spinning, and weaving, by motors connected direct to the line shafts, from which the carding machines, spinning frames and looms were to be operated By doing away with much of the present shafting, counter shafting, etc., now used in transmitting power to the different departments, losses ranging from 20 to 60 per cent. could be saved, and the successful issue of this work would result in many other improvements of a like nature in the power plants of the city.

CHEMICALS AND DYESTUFFS.

The following are current quotations in Montreal:—

Bleaching powder	$ 2 00	to	$ 2 10
Bicarb. soda	2 25	"	2 30
Sal soda	0 75	"	0 80
Carbolic acid, 1 lb bottles	0 35	"	0 37
Caustic soda, 60°	1 80	"	1 90
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	5 00	"	6 00
White sugar of lead	0 07	"	0 08
Bich potash	0 10	"	0 11
Sumac, Sicily, per ton	55 00	to	60 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	1 90	"	2 10
Castor oil	0 10	"	0 12
Cocoanut oil	0 06½	"	0 07