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# CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XI.

TORONTO, MAY, 1894

No. 5

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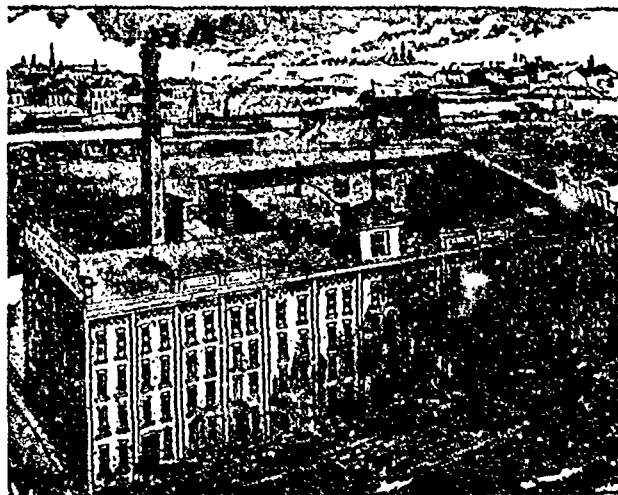
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# CANADIAN Journal of Fabrics

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## Canadian Journal of Fabrics

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

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### THE CANADIAN TEXTILE DIRECTORY

A Handbook of all the Cotton, Woolen and other Textile manufactures of Canada, with lists of manufacturers' agents and the wholesale and retail dry goods and kindred trades of the Dominion, to which is appended a vast amount of valuable statistics relating to these trades. Third edition 487 pages, price \$3.00.

E. B. BIGGAR, Publisher, Montreal.

### HOW TO DISTINGUISH TEXTILE FIBRES.

It is customary to mix, spin, and weave fibres in various proportions, and as it is important to know the quantities of different fibres contained in goods to be imitated, researches have established a number of tests for this purpose, with which every manufacturer and manager should be thoroughly conversant.

In a fabric composed of linen and cotton, a strong potash solution will color the linen fibre a deep yellow, while the cotton will be only slightly tinged with the color; a mixed yarn or fabric will, therefore, assume a spotted or striped appearance in the liquid. If a sample of the linen to be tested is dipped into olive or rape seed oil, the fabric will quickly absorb it. When the excess of oil has been removed and the fabric appears striped, it is not pure linen, but mixed, and further, the linen thread becomes transparent and the cotton thread opaque; while, if the linen saturated with oil is laid upon a dark substance, the linen threads will appear much darker than the cotton on account of this transparency. In order to destroy or dissolve cotton by a process similar to carbonization, the fabric to be tested is laid in a mixture of three parts sulphuric acid and two parts saltpetre for eight or ten minutes, then washed, dried, and finally treated with ether containing alcohol. The woolen and linen fibres have remained uninjured, while the cotton has been dissolved.

In order to distinguish animal from vegetable fibres, says *Textile Industries*, they may be boiled in caustic potash lye. Both wool and silk will be dis-

solved thereby, but not linen or cotton. If a sample of woolen goods is to be examined to see if it contains cotton, place it in a concentrated sulphide of sodium solution; by this the wool is dissolved and can be entirely washed out in hot water. The residue will be vegetable fibre, and, if the sample was at first weighed exactly, the actual percentage of wool can be ascertained by weighing the remaining vegetable fibres. Such a fabric can be analyzed with still greater facility in an undyed condition. Wool and silk, when plunged into picric acid, are dyed a fairly fast yellow, while both linen and cotton remain white.

A silken thread, when exposed to a flame, ignites, evolving a smell of burning feathers, but continues to burn only as long as it remains in contact with the flame, and is extinguished when taken away, the burnt end forming a black, charred substance, thicker than the thread. Wool behaves similarly, but the odor is more repugnant.

The surest and best test, however, is the microscope, which gives unerringly the component fibres of the fabric under examination. For this purpose several threads must be drawn out of the fabric in question (an operation best performed under water) and subjected to an examination with a power of from 200 to 300 diameters.

The linen fibres appear as cylindrical formations, with nodular swellings; the former sometimes split into thinner fibres, especially in the case of linen which has been used.

Cotton fibres, however, will show themselves as flat ribbons, and are very thin as seen where the edge is shown. With mixtures of linen and cotton the examination of the fibres can be conducted with still greater facility, by opening a small strip of the material to be investigated, introducing it into a dilute alcoholic solution of aniline red (fuchsine), but only for a very short time, after which it is well washed, and then immersed in caustic ammonia for two hours. In this operation the linen fibres are dyed rose red, while the cotton fibres take no trace of color, and their examination is thereby rendered much more easy.

The fibres of wool appear under the microscope as cylinders covered with scales, and their delicate structure is rendered still more visible by treatment with sulphuric acid, which dissolves the yolk that fastens these scales to the fibres, but the different qualities

can also be comparatively tested to ascertain the uniformity, firmness, or strength. The microscope is a means of distinguishing the relative value of the different wools better than is possible by any other mode. For this purpose, a "wool gauge" has been constructed, consisting of a brass frame screwed to the stage of the microscope, into which the wool fibre is fastened in such a manner that it is first loose, but is gradually tightened with a screw for that purpose, when the diameter can be measured with a micrometer and an exact measurement of the fibre obtained. But as all the fibres are not equally thick, it is necessary, of course, to measure several, to obtain the average. To measure the elasticity and strength of the fibre, it is first drawn tight, the index placed upon zero, and the tension increased by the gradual drawing with the screw mentioned until the fibre breaks. The index will show on the scale how many millimeters a fibre may be stretched before it breaks. It is evident that this experiment must be repeated with several fibres, and that the same apparatus can naturally be used for this purpose for all kinds of fibres.

Other animal hair used for textile fibres, goat hair, horse hair, etc., can also be recognized and distinguished by the microscope. As for silk, it presents no peculiarities, but is simply a homogeneous cylinder without the scale layer, marrow, and bark substance of hair. The optical difference of all these fibres is aided by the micro-chemical investigation. Iodine and sulphuric acid may be used as reagents, whereby the vegetable fibres, consisting of cellulose, are always colored blue, which is not the case with animal fibres. Silk differs from the latter in that it is dissolved in concentrated muriatic acid.

#### MOULD IN WOOLEN GOODS.

(TRANSLATED FROM DAS DEUTSCHE-GEWERBE.)

Every warm season brings a number of disagreeable incidents to the business of the woolen goods manufacturer. Among these is the appearance of mould spots, which frequently cause great injury to the goods. Mould spots are the product of a fermentation produced by moisture and heat. Fungi are developed at first, which not only destroy the colors of the material, but by continued operation the wool fibre itself. This explanation gives at once the origin and action of the mould spots. Whenever, therefore, in hot weather, wet or moist goods lie for a length of time, the cause of the mould spots exists, especially when the pieces are piled up, because the pressure prevents the admission of air and causes heat.

Mould spots act with greater or less effect upon dyestuffs, according to the intensity of the dye. Sometimes no effect is produced at all, at others it is very slight. In a higher state of development the mould destroys the wool fibre entirely. The cloth can be pressed through readily on the mouldy spots, and the mechanical operations of fulling, washing, or teaseling

cause holes to appear in the cloth. Mould spots are found most frequently in white or light vat-blue material intended to be dyed in the piece.

In this instance, in consequence of the indifferent behavior of the affected places toward every color, the mould spots do the greatest damage. They also destroy the color of cloth dyed dark blue in the wool—that is, dyed a "pure vat," although not so readily as light blue. They do not so often occur in cloth dyed in the kettle, the wool having been boiled for some time in this operation. The boiling of the wool appears to a certain extent to be a preservative against mould, which is perhaps explained by the circumstance that it partly destroys impurities adhering to the wool, such as yolk, fat, etc., or else converts them into substances less hurtful. It is also possible that the mordants used for kettle colors, such as alum, tartar, sulphuric acid, chromate of potash, sulphate of iron, etc., act as a preservative in some cases. The greater tendency of vat-blue goods to mould justifies this assumption, because indigo-blue wool is not boiled in dyeing, and the dyestuff is inclined to fermentation.

By observing the various stages of the manufacturing processes, the mould spots seem to occur most frequently in the crude cloth as it comes from the loom and in the unwashed pieces from the fulling mill, but not when they are washed immediately afterward. Nothing accelerates the process of moulding so much as the natural impurities clinging to the material and the various ingredients introduced during the stages of manufacture. This accounts for the greater inclination of the crude cloth to become mouldy. Residues of yolk, dyestuff, oil used for lubricating, glue, sizing, etc., in combination with the moisture used for the filling, all contribute largely toward the heating of the cloth, so that in sultry weather storing for twenty-four hours under the loom or other badly ventilated place suffices for the formation of mould. For this reason attention must be paid to secure the greatest cleanliness under the loom, and to the airing of the cloth lying there. The beaming of the cloth is, for this reason, not to be recommended. It is better to pass the cloth through a roller and let it drop loosely underneath the loom; not, however, directly upon the floor, as is too often done, but into a flat wooden box. This is to be recommended especially for ground floors, where to the proper humidity of the cloth is added that of the ground. The floor as well as the cloth box must always be kept clean and free from mould and fungus formations, as the development of mould in the cloth progresses much more quickly in a place where it already exists. It is advisable to impregnate the box and floor with some anti-septic agent, which, of course, must not exert an injurious influence on the cloth.

It is, of course, necessary that the pieces as soon as they come from the loom should be dried at once. Weavers generally have a custom of leaving the ends of the warp in the loom, and to knot the fresh warp ends to them. This should never be permitted, especially in summer, and particularly with indigo, light blue,

or white cloth. When a stoppage of one or more days occurs the cloth should be taken from under the loom, and folded loosely over it. The crude, dried pieces should always be stored in an airy but by no means moist room. It is best to wash out the sizing at once after drying and to dry them again, if they cannot be placed at once in the fulling mill. With clean cloth, if the size is washed out, the danger is much less than with crude cloth. This does not, however, avoid the danger of unsized pieces, especially if insufficiently washed, or manufactured from dirty wool, becoming mouldy if they are left for any length of time in a dirty condition. Carbonization is a protection against this danger. The writer has discovered by experiments that light vat-blue pieces, carbonized with sulphuric acid, can be left much longer in a wet condition than pieces which are not carbonized. The washed cloth should, therefore, be carbonized at once if possible, as the wet storage after neutralizing is much less dangerous.

Moreover, carbonization will serve not only as a preventative of mould, but will also improve pieces that have already become mouldy. An author recommends the carbonizing of pieces of cloth, in which mould spots appear, with sulphuric acid before dyeing, in order to prepare these spots to take the dye again. This is correct, if dealing with mould in its first stages; but when the destruction has already progressed so far that the wool is attacked, it is to be feared that not even carbonization will be of much avail.

Hardly less dangerous than sizing in crude material is soap in fulled cloth. It appears that the decomposition of dyestuff and fibre by the soap is a process differing from the actual formation of mould, as if the alkali had a destroying effect in consequence of the heating. In the case of fulled cloth not yet washed a few hours' storage only is necessary to produce mould spots of larger size and more injurious character than in the crude cloth. For this reason fulled cloth should at once be placed in the washing machine, and if this is not possible, it should be washed in the fulling mill.

A frequent cause of mould spots is found in the prolonged storing of the washed pieces upon the bottom of the fulling or washing machine, even when they are clean and only contain traces of soap. Washed cloth must, therefore, never be kept for any length of time upon the bottom of the fulling or washing machines. The writer has met with various mishaps from this cause, and on several occasions the pieces had become mouldy throughout. It appears that the bottoms of older machines, the wood of which is already in a state of decomposition, promotes the generation of mould spots. In the same manner old cloth horses, the frames of which are decaying, are dangerous even for fully clean goods. Otherwise, the danger of clean cloth becoming mouldy, even if it remains hanging wet for several days, is not very great. Pieces that are not perfectly clean, or that still contain traces of yolk, oil, or soap, become heated when lying in a wet condition much more quickly than clean cloth. Generally speaking, cloth made from badly washed wool in all the

stages of its manufacture runs greater danger of becoming mouldy than when it is made from clean wool.

Both heating and formation of mould occur in cloth manufactured from dirty wool, especially when, after nap teasing out of full water, it lies for any length of time with pieces closely piled together. Generally heating occurs much more readily in wet pieces smoothly folded than in those irregularly folded and less wet. This may be due, first, to the high temperature of the water, especially river water in summer, and again, to the circumstance that the wet, and, after nap teasing, smoothly and regularly folded cloth lies generally very compactly, so that the admission of air is impossible. On the other hand, clean cloth can remain suspended for some time before heating or mould will occur. The suspension of clean cloth for five or six days is not as injurious as a few hours' teasing of crude or fulled cloth, still containing soap.

In order that the manufacturer may protect himself against damage by mould spots, let him, before everything else, see that the cloth, neither in a crude nor a fulled condition, lies longer than is absolutely necessary. Should a delay occur at any time, let him dry the wet pieces as soon as possible, and not let them accumulate in a wet condition in warm places, drying chambers, etc. Finally, he should guard them from the direct influence of the sun's rays.

#### THE CANADIAN WOOL CLIP OF 1894.

Probably no Canadian wool dealer has better opportunities of gauging the tendency of the wool market, and of knowing the views of manufacturers, than John Hallam, of Toronto. Mr. Hallam has given us the following review of the situation, which we give in full, not only because of its interest to manufacturers, but because it bears out the observations made in the last issue of this journal, on the effects of the proposed new tariff. He says:—

“With reference to the prospects of the coming clip of wool, and the price to be realized, there is nothing definitely known. The delay at Ottawa in settling the tariff on woollen goods, has created an industrial uncertainty, and a want of confidence in the future of the trade. The proposed change in the tariff from compound to purely ad valorem duties will seriously embarrass the tweed, blanket and yarn manufactories. They will not be able to successfully compete with the shoddy goods from Huddersfield and Dewsbury under the proposed change, unless the Government take the duty off coal, machinery, and other articles now taxed and used as raw material. This is having a very depressing effect on the price of our domestic wools and on the woollen trade in general. Home competition has reduced the price of Canadian tweeds, blankets and yarns to the lowest possible point, and if the Canadian mills are subjected to the keen competition of these goods under an ad valorem duty with England, France and Germany, where machinery and all raw material are free of duty, it simply means shutting up

some of the mills. In my opinion, this change in the tariff will only benefit the importing and ready made clothing trade.

"The passing of the Wilson Bill will not affect the price of Canadian wools, as the domestic wools of the United States are now as low, if not lower than in Canada, but notwithstanding this, I am afraid there will be some speculation that may raise the price of our domestic wools beyond their present values, relying on the expectation that when the duties are taken off in the United States the price will rise. The Americans are not changing their tariff on wools to give the Canadian wool growers more money for their clip, but simply to give the manufacturers of the United States free wool, at the lowest possible price in competition with English and foreign wool markets, and if the dealers and manufacturers through the country can only realize this fact, the clip of 1894 will be bought at fully 10 to 15c. less than in 1893.

"Most of the clip of 1893 is still in the hands of dealers and unsold. During the last twelve months large quantities of wool and sheepskins, the product of the United States, have found their way into Canada at prices much lower than our domestic wools and sheepskins could be sold for here. I would advise caution in buying the Canadian clip, as no money has been made out of Canadian wool for three or four years past.

"The trend of the trade goes to show that the coming clip should be bought with more care and at the following prices:

#### WASHED FLEECE WOOLS.

Combing fleece, including Leicester, Cotswold, Oxford	
Down and all long-haired bright wools .....	15 to 16c.
Pure Southdown, free from tags and chaff .....	18 to 20c.
Shropshire, of good sound staples .....	18c.
Fine clothing wool .....	18c.
Rejections, including black, chaffy and cotted wools....	11 to 12c.

#### UNWASHED FLEECE WOOLS.

Leicester, Cotswold and other bright wools.....	8 to 9c.
Shropshire, good sound staple.....	10 to 11c.
Pure Southdown .....	11 to 12c.

#### PRACTICAL RECIPES FOR DYEING.

**Fast Black on 100 lbs. Cotton Goods.**—(1st bath) 5 lbs. melantherine B. or R, 10 lbs. Glauber salt. (2nd bath) (diazotising bath); 3 lbs. nitrate of soda, 10 lbs. muriatic acid. (3rd bath), 1 lb. developer M., 3 lbs. sal soda. (The "B" brand produces slightly bluer shades than the "R.")

**Black on Woollen Goods (piece or yarn).**—For 100 lbs. goods, 4 to 4½ lbs. new acid black S. conc., 3½ to 4 lbs. sulphuric acid, 10 lbs. Glauber salt. Boil for about one hour and rinse.

**Direct Fast Black.**—In one bath with diamond black; diamond black N/G and diamond green. (Simplified method.) Enter the goods in a dyebath, to which 10 lbs. Glauber salt and 1½ lbs. acetic acid have been added at about 100 deg. F.; bring to the boil, and continue boiling for one hour. If the bath is not then ex-

hausted, add further ½ to 1 lb. acetic acid. As soon as the bath is exhausted, add 1 lb. bichromate potash and boil for further half hour, then rinse. With 3 lbs. color good blacks are obtained. The N/G gives the bluest black. A jet black is best obtained by using about ¼ lb. diamond in combination with about 2½ lbs. diamond black. Blacks produced by this process are as fast to light, air, milling and acids as those dyed on a chrome mordant, and are of greater intensity.

**Fast Bright Blue (on woollen goods) with New Victoria Blue B.**—This color is best dyed neutral, that is, without any mordant. Begin dyeing about cold, raise to boil and boil for half to three-quarters of hour. In this manner the bath is thoroughly exhausted. For a light shade use about 2 ozs. For medium shade 8 ozs., and for a full shade 1 to 1½ lbs. to 100 lbs. goods.

**Fast Grey on Cotton Goods (100 lbs. cotton).**—1 lb. benzo-fast-grey, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for one hour; rinse. (For very dark shades use 20 lbs. common salt and 2 lbs. sal soda.) Beautiful light blue greys can be obtained by using 4 to 8 ozs. of benzo-fast-grey. This color is fast to alkali and acids, and does not change when subjected to heat. It is also fast to perspiration and fairly fast to light. For shading benzo-fast-grey, we would recommend our chloramine yellow, geranine G; benzoazurine and benzo-cyanines.

**Light Slate on 100 lbs. Raw Cotton (fast).**—12 ozs. benzo-fast-grey, 6 ozs. geranine G, 4 ozs. chloramine yellow, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for one hour and rinse.

**Dark Slates on 100 lbs. Raw Cotton.**—2 lbs. benzo-fast-grey, 9 ozs. chloramine yellow, 6 ozs. geranine G, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour and rinse.

**Drab on 100 lbs. Raw Cotton.**—12 ozs. benzo-fast-grey, 8 ozs. geranine G, 5 ozs. chloramine yellow, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour and rinse.

**Fast Yellow (on 100 lbs. Cotton Goods).**—2 lbs. chloramine yellow, 10 lbs. common or glauber salts. Dye boiling for 1 hour and rinse. Chloramine yellow is a very fast dye and also shows a remarkable resistance to chlorine. (Bleaching powder.)

**Light Drab (on 100 lbs. Raw Cotton).**—3½ oz. benzo-fast-grey, 1½ ozs. congo-orange G, 1 oz. chloramine yellow, 10 lbs. Glauber salt. Dye boiling for 1 hour. Lift and rinse.

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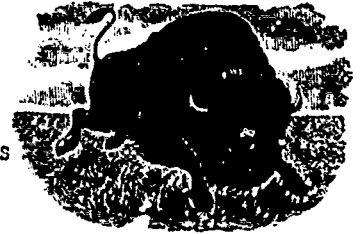
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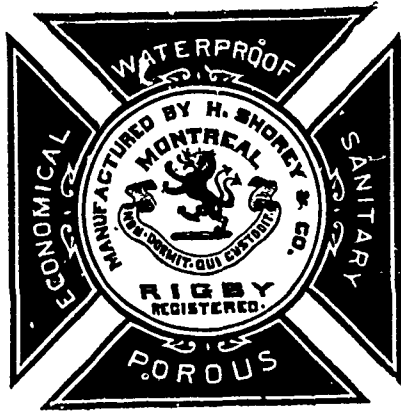
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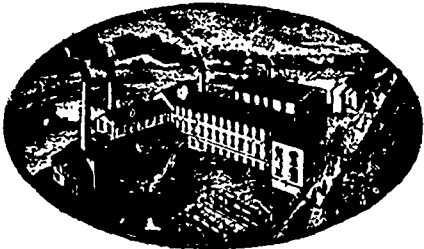
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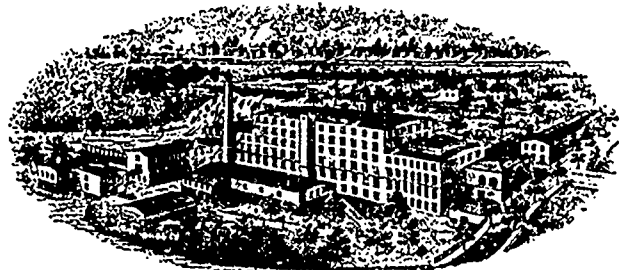
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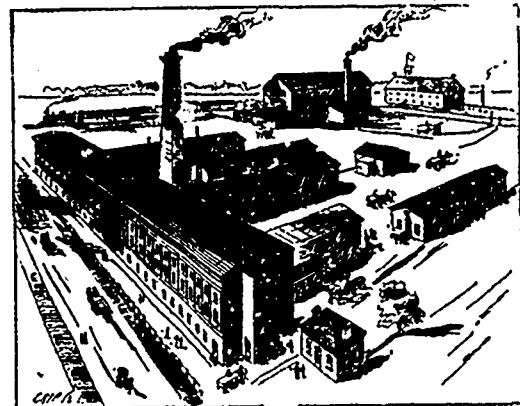
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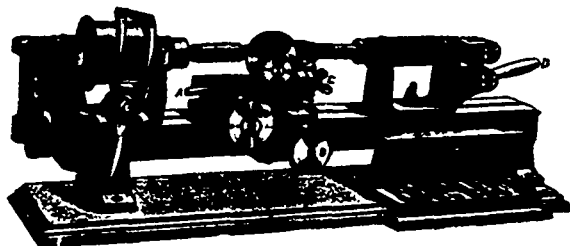
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## MACHINE FOR TRUING AND VARNISHING LEATHER-COVERED ROLLERS.

The paramount importance of making the leather-covered rollers used in the manufacture of nearly all classes of yarn, and especially cotton yarns of the finer counts, truly cylindrical, is so well known that we need not dwell upon the advantages to be derived from this condition. It may, however, be as well to call to mind the methods by which this end is attained at the present time. In the first place, the strips of leather, before being placed on the rollers, generally have their soft sides ground up by special machinery to render them as nearly uniform in thickness as possible. After the leather sheaths are placed on the rollers they are subjected to a shearing action in a specially constructed machine, whilst under the influence of heat, with the result that they are made perfectly cylindrical. This cylindricality is, however, lost, in a greater or less degree, during the working of the rollers, owing to a variety of causes, and in addition they are also very often grooved. This is due to the passage of the threads between them and the bottom rollers; but the defect has been very largely minimised during late years, in some of the machines, by the adoption of differential traverse motions for working the thread-guide rods. In whatever way these defects are caused it is sometimes the practice to get rid of them by placing the rollers in a machine, one at a time, and grinding their surface with a roller covered by glass-paper or ground glass whilst they are rapidly revolved. We believe this is the only system employed at the present time, so that the machine we are about to describe should be of considerable interest to manufacturers, who will now have a choice of two systems.

The machine shown below is the invention of Mr. A. Seymour Jones, of the Cambrian Leather Works, Wrexham, and is made by Dronsfield Brothers, Limited, Atlas Works, Oldham, England, whose reputation for first-class work is so well known. The machine,



as will be seen, is in the form of a lathe with fast and loose headstocks, and is arranged to take in any length and diameter of roller. The rollers are held in position for turning by suitable chucks which receive the roller ends and are revolved by the driving pulleys; a slide rest is fitted on the bed, which is actuated by a screw fitted inside the bed, and which receives its motion by the worm and wheel gearing shown at the left-hand side of the fast headstock. The slide is put in or out of gear by the handle A; whilst the hand wheel B is for regulating the position of the cutter, and is provided with a graduated scale over which is fixed a pointer, so that the exact amount of cut is readily seen. The position of the cutter can be adjusted both in angle and in height by the thumbscrew C. To assist in the vertical adjustment, a fine micrometer thread is chased on the stud supporting the tool holder, and a milled-headed nut, formed with a corresponding thread, bears against the underside of the latter. The tool holder is also formed with a graduated scale, by means of which the tool can be set to the proper cutting angle. The rollers can be placed in the machine, or released therefrom, by depressing the handle D. The cutter employed in the machine shown is a circular steel disc which may be held stationary by means of a thumbscrew, or allowed to revolve during cutting. When kept stationary—and this has been found to be the best condition—a large extent of cutting surface is available, since it is only necessary to release the thumbscrew and rotate it a little to obtain a new and sharp cutting edge after one point has become dull. To enable the disc to be

readily sharpened by a hone, the spindle on which it is mounted carries at the opposite end a small spur wheel, and this is made to engage with a wheel chuck fixed in the spindle of the fast headstock. A chisel-shaped tool can be used when desired in place of the disc. Since the block for our illustration was cut, a slight alteration has been made in the strap-fork arrangement. The fork, instead of being pivoted as shown, is supported by a short horizontal rod, carried by brackets fixed to the headstock. One end of this rod projects beyond the inside face of the headstock in such a way that the slide rest will engage with it, when traversing in that direction, and automatically stop the machine by shifting the strap on to the loose pulley.

The *Textile Manufacturer* says of this machine: "We had an opportunity of seeing one of these neat little machines at work, and were quite pleased with its remarkable efficiency in making the rollers perfectly cylindrical and smooth. The machine can also be used for varnishing rollers, and is adapted for truing both new and old rollers, and whether covered with calf, goat, or sheepskin leather. If required, the machine is fitted on a polished hardwood baseboard, with box for receiving the chucks."

## TEXTILE PROGRESS.

BY PROF. SCHULZE.

A German proverb says, "Kleider machen Leute," which is equivalent to the English "Fine feathers make fine birds." Another proverb runs, "We receive a man according to his dress, and dismiss him according to his intellect." Accordingly, we find that it is a first principle in human nature to take special care as regards the attiring of the body. Savages only make a modest attempt by tattooing their bodies, while the civilized nations of all ages and countries have made an art in dressing themselves in splendor and rich costumes. This endeavor gave birth to an industry which, up to our days, has contributed in no slight degree to the prosperity of many towns and countries—I mean the textile industry. It is not my purpose to read a paper upon the history and development of art and industry. My particular object is to give a very general summary of the evolution of textile design from the earliest times, and to show how many interesting details can be supplied by such an apparently insignificant subject as that of woven designs. With regard to the period at which our investigations should commence, it might be considered that the art of usefully applying such perishable materials as the fragments of flax, the wool of sheep, and the fine thread spun by the silkworm, dates from no very distant time. But that is a great mistake. We should be wrong in placing the birth of the textile industry at the commencement of the Christian era. We should be equally in error if we placed this period 2,000 years further back, to the time when Greek art was not yet spoken of, much less European culture. We can, with confidence, go back 3,000 years, that is, in all 6,000 years from the present time. Monuments of the early period prove to us that, even then, there was a culture in ancient Egypt which did not exclude the existence of a textile industry; on the contrary, its existence may be proved almost with certainty. King Menes is said to have reigned over Egypt about 4,000 B.C. He was accused by his successor of having elevated his people by excessive luxury. He was cursed by the priests (who also may be taken as a token of civilization), and this curse was engraved upon a square of stone. The author Ebers informs us how an Egyptian king's mother occupied herself with the study of physic, and concocted a lotion to make the hair grow. Now, I think I may fairly conclude that a race of people who were in need of some means to make the hair grow more freely than in its natural condition, would not have neglected the protection and adornment of the other parts of the body; hence the existence of textile industry may be easily inferred. No remains of stuffs from this early period are extant, but the paintings in the Pyramid show the Egyptian dressed in gowns striped with primary colors, blue, red and yellow. Besides this, little designs have been found which are evidently reproductions of woven patterns. There are little drawings of geometrical construction, combinations of lotus flowers. There are also other

motives in the designs from which we may conclude that they were applied to clerical vestures. In a series of centuries we find that forms of certain animals, plants, etc., which were deemed sacred to religious service, were used symbolically for the designs for clerical vestments and antependiums. Hence, it is probable that the Egyptians likewise used the forms of their holy animals and plants. This was particularly the case with the Assyrians, and the paintings of this race were very much like those of the Egyptians. I might, therefore, name some of the principal types which form the basis of the Egyptian ornaments. First, there are the buds and flowers of the lotus and papyrus plants, which were the symbol of the nourishment of the body and mind. Then the dung beetle or scarabæus. This insect has the remarkable habit of laying its eggs in excrement, with which it envelopes the egg, and of forming a little ball. The beetle draws this ball after it until the surface hardens. The ball containing the embryo of a new life, which the heat of the sun will awaken, was to the Egyptians symbolical of the globe, out of which new life would spring, and of the minuteness of the Creator's work. As the ancient Egyptians were sun worshippers, their most sacred figure was the disc of the sun, mounting the sky on eagle wings. The Uraus serpent was the symbol of sovereignty over life and death, for the bite of this creature meant instant death. Besides these, many animals were sacred. Another ancient State possessing culture was that of Assyria. The territory between the two great rivers, the Euphrates and Tigris, was in early times the home of extensive industrial art. The Bible mentions the magnificence of old Babylon, and its circumference is said to have been about 40 miles. In the ruins of great Assyrian buildings were found plates made of alabaster, which were used for covering the walls. The prowess of the kings was shown on these plates. These give us plenty of clues to a textile industry, for we are able to ascertain perfectly well the manner in which the Assyrians made patterns for dresses, carpets and antependiums. On these plates the Assyrians are represented as being dressed in long, loose gowns with fringes and embroideries to represent beasts fighting, fantastic forms of animals, bodies of lions with human heads and wings, human bodies with wings and birds' heads. Amongst these we see borders with stars, strings of crosses, zig-zag lines, winding curves, meandering lines, palmettos, and here also the disc of the sun with wings—the symbol of Assyrian sun-worship. A very characteristic ornament was the "Hom," the Tree of Life, which bears fruit like pomegranates. The pomegranate plays a large part in the symbolism of many religions, as well as in the Christian religion. In ancient times it was the symbol of love; Jupiter makes the bridal Juno taste of pomegranates; Leah wanted to buy the love of Jacob—who loved Rachel better than her—with love apples the smell of which animates love; and lastly, the apple was the symbol of the generative power of nature, and was the forbidden fruit of Paradise. The Bible makes mention of weavings of an Assyrian character. Moses says of the makers of the ten large tapestries of the Tabernacle, which were ornamented with cherubim:—"Them hath [God] filled with wisdom of heart, to work all manner of work of the engraver, and of the cunning workman, and of the embroiderer in blue and in purple and in fine linen, and of the weaver" (Exodus xxxv. 35). About the official dress made for Aaron, Moses says—"And they did beat the gold into thin plates, and cut it into wires, to work it in the blue and in the purple and in the scarlet and the fine linen with cunning work. . . . And they made upon the hems of the robe pomegranates of blue and purple and scarlet and twined linen." A drawing shows a piece of the dress of an Assyrian king, when sitting upon his throne. In the circles, surrounded with palmettos and pomegranates, the tree of life is standing, surmounting it being the disc of the sun with eagle wings. The figures are kings and priests, and those with wings are cherubim, with human and eagle heads. The lions with wings probably represent subordinate gods. A third great State of ancient culture in the far east of Asia is China. This empire has an important connection with the textile industry, being the native country of the most precious material for weaving, that is silk. In the year 2698 B.C. the consort of King Hongi, named Louitsen, is said to have invented the rearing of silkworms and the weaving of their threads.

The strict custom of destroying with fire the dresses of the dead accounts for the fact that few or no remnants of old Chinese textile productions are preserved. Notwithstanding this we are able to draw conclusions from modern drawings as to those of times long gone by. A great characteristic of the Chinese is their adherence to ancient customs and a surprising power of resistance to foreign influences. With regard to art, the Chinese are neither progressing nor falling back. They employ objects of all possible kinds, such as clouds, the waves of the sea, groups of rocks, shells, vases, &c., and all the flora. The lotus flower of the Egyptians is often used, as is also the peony, the symbol of the sky and the earth, deriving from the former flower perfume and from the latter brilliancy. We also find a number of fantastically shaped animals, of which the dragon is a frequent figure—a marvellous creature, with the head of a chameleon, the horns of a stag, the claws of an eagle, and the tail of a serpent. This dragon is the symbol of supreme wisdom. Its empire is all space above the mountain tops, among the clouds, in the underground depths, and in the air and the water. The dragon is the martial device of the Emperor and of the senior princes, possessing in this case five toes. The dragon of the junior princes not being so important, has four toes, and that of the Mandarins only three. The device of the Empress is the phoenix, a bird with a peacock's tail and a head covered with protuberances. It symbolizes a long and happy life. The Chinese horse, or "Khilin," has the body of a stag, the horns and tail of an ox, and horse's hoofs. This marvellous creature appears in Assyrian art as a unicorn, and it may be traced up to the 13th and 14th centuries. Lastly may be mentioned the Chinese lion, or dog, named "Fo." All these fabulous animals, together with specimens of the vegetable kingdom, and some very elaborate, fine compositions, form the elements of the extraordinary designs which the Chinese make use of in the decoration of their stuffs. After considering the textile industry of the three oldest civilized nations in Asia and Africa, we turn to Europe and give our attention to the nation which laid the foundation of European culture, that of Greece. Until 1879, we are only able to draw conclusions as to the designs on Grecian stuffs from the decoration of old buildings, and old pottery. Greek authors give a good deal of information upon the designs of these stuffs. Excavations made in South Russia, in 1879, have confirmed the supposition that no branch of industry or art has its own decorations, but the dominant style belongs to them all. Amongst the articles found in the tombs, detailed and illustrated in the "Compte Rendu de la Commission Archéologique à St. Petersburg," in 1881, there were a number of fabrics, the age of which is denoted positively by inscriptions. From the tomb of a warrior of the 4th century a great cover, which was laid over the sarcophagus, was taken. It is about seven yards square. We see alternate mythological scenes and ornaments. This cover proves to be a Greek production, from the numerous inscriptions upon it in the Grecian language. The name Jocasta shows that scenes of the legend of Oedipus were being represented. The names Phœdra and Eulimene close by two women in violent motion, and the name of Atkaia point to the wrestling combat of Peleus with Thetis. The goddess Athene, armed with the protective ægis, and a lictor, returning from a chariot race, are also depicted on the cover. Another little piece of woolen material was found in a tomb, dating 5th century, B.C. It is decorated with small zig-zag crosses, meandering lines, and similar motives. In the same tomb which contained the large cover was found a piece of woolen material which was extraordinarily thin. One side of the fabric is bound with satin and the other with reps. The piece of stuff proves the great perfection of the Grecian textile industry. The patterns are woven upon a cherry-brown colored ground in tapestry style. The design represents a series of five ducks with raised wings and heads, alternately turned to right and left. A beautiful dark green, whose brightness is very well preserved, is seen on the heads and necks. Other different fragments were found in the same place. As these preserved fragments of the ancient Greek weavers' craft are of the greatest value to inquirers, so numerous literary references convince us of the cleverness of the Greek figure weavers. Their productions were worthy of a place by the side of their other artistic works—being of a high degree of merit. It is impossible to quote all

the passages, but it may be sufficient to mention two of them. Ovid, in his metamorphosis of Arachne, says it was a pleasure to observe Arachne winding the wool and curling and twisting it into fine threads. She contended with Pallas Athene in a trial of their skill in weaving. Each puts her loom in a separate place, and stretched the fine threads thereon. The combatants hasten to their work. Pallas Athene weaves the Castle of Cecrops, standing on the rock of Mars. Twelve immortals are seated on their thrones, in austere solemnity, with Jupiter in their midst. Neptune, the sea god, alone is standing, and, with his trident, he strikes the unhewn rock, from which the salt water gushes forth. Pallas Athene is shown, furnished with the defending aegis, and having on her head a helmet, and in her hand a pointed lance. At the place where the lance has pierced the ground a green olive tree bearing berries, is sprouting. The work is surrounded by a garland. The gods look at it with astonishment. It is very interesting to compare this woven picture, described by Ovid, with the splendid sculptured work, executed by the celebrated Greek sculptor Phidias, for the pediments of the Parthenon, now the temple of the goddess Athene, on the Acropolis. England is fortunate enough to possess in the far-famed Elgin marbles in the British Museum, the original remnants of this work of Phidias. This sculpture also shows the representation of the quarrel concerning the name of the town of Athens. But Arachne wove the story of Europa carried away by the bull. The latter seems to be really living, and the sea to be heaving. In addition Arachne wove Asteria seized by the flying eagle, the loves of Leda and the swan, and other similar scenes. An ivy garland went round the border, with flowers interwoven. Ovid reports, moreover, that Pallas Athene was not pleased with Arachne's work, on the contrary, she punished her by changing her into a spider, ugly indeed, but a skilful weaver. This was Arachne's punishment for having had the temerity to remind the daughter of the father's amorous adventures. A passage in the Odyssey also gives a clear image of Grecian design. Ulysses describes to Penelope the dress he wore on his departure to Troy. The dress of the noble Ulysses was of a purple color, and rough in texture, with flashing embroidered front. A spotted doe is struggling under the forelegs of a savage-looking dog. The astonishment of all beholders is excited by the manner in which the dog embroidered in gold is strangling the doe, while glaring at it most ferociously, the latter meanwhile endeavoring to regain its freedom. This embroidery is very interesting, because we find among the stuffs of the 13th century a very similar design. Such weavings of Roman origin as have been preserved date from the time of the Roman emperors. A very rare little piece of silk—perhaps belonging to the time before Christ—is preserved in the Church of Valeria, at Sitten, Switzerland. The design shows a female figure, sitting on the back of a sea-dog, and under the latter an acanthus stalk. This stuff from Sitten; the Greek fragments already mentioned as being found in Southern Russia, and perhaps two or three other little remnants in various museums, are the only known remains of textile products of the time before Christ. To arrive at the place where probably the oldest weavings of the Christian era were produced, we must again return to the country which has shown itself so well able to preserve the treasures entrusted to it. I mean Egypt. In Sakkarah and Akhmin, in Upper Egypt, large cemeteries have been discovered in recent years. The dead bodies contained in them were not enveloped in strips of linen, as were the old Egyptian mummies, but were dressed in the garments they had worn when alive. We obtain a complete picture of the costume of this period. But we are more interested in learning the materials of which the garments are made. There is the towel-faced material, which when used for costume was worn in the winter. In the height of summer, when steeped in fresh water, the peasants would use it to wrap round the wine amphora to cool its contents. They also had a kind of wool rep, a compact twilled woolen material with a woven broad purple stripe; woolen cloth, evidently woven over rods, looking like velvet with an uncut pile. But our greatest interest will be excited by the woven bands crossing each shoulder and running vertically down the front and back of the robe, and by the round and square pieces

of cloth, the medallions, which were the signs of rank. These articles were woven in tapestry style, with many-colored threads, in wool. There are ornamental and figure pieces in great variety; bull-fighters, slingers, bowmen, mounted hunters with lances, hunting lions and leopards, and a variety of animals, such as wild goats, hares, birds, &c. Further on, medallions with biblical scenes, perhaps the history of Joseph in Egypt; or another one showing Abraham about to sacrifice his son Isaac. Not only were woolen fabrics found in excavating these tombs, but also silk materials. We find little designs, not larger than the size of a pea, composed of little lozenges, hearts, and clubs. In squares or circles occur horsemen or dancing girls similar to designs on Persian fabrics mentioned later on. At present it is hardly possible to say positively whether these fabrics were manufactured in Persia, or whether they were woven in Alexandria, Antioch, or Byzantium. Similarly, we are not yet able at present to determine the age of these goods. At all events we have reason for supposing them to be some of the oldest preserved woven products of the Christian era, belonging to the time from the 3rd up to the 8th century.

### CARPETS—ANCIENT AND MODERN.

BY SIR GEORGE BIRDWOOD

Between B. C. 1000 and 800, carpets were known to Homer and the Homeridae; and if we bear in mind that the people of antiquity did not strictly discriminate, as we, since the 17th century only, have learned to do, between carpets and other tapestries, such as tablecloths, counterpanes, and coverlets generally, and curtains, and hangings of every description, it at once becomes clear that already at the time of the composition of the Iliad and Odyssey these textiles had acquired the ritualistic Euphratean types by which they have ever since been predominantly characterized throughout Central, and Southern, and Western Asia, as also that in their passage through Phœnicia and Phrygia, into Europe, and in the course of their adaptation to the purposes of the Greek, and, subsequently of the Romans, these textiles were, for the most part, completely secularized, although in some of their uses, as for the veils of temples, they retained, down to the conversion of Europe to Christianity, the plenary religious significance always borne by them at Memphis and Thebes, and at Babylon and Nineveh, the four chief centres of their primary production.

From Egypt, and from Chaldea (later Babylonia) and Assyria, the manufacture of them spread into Asia Minor (Khita), where at a very early period, it attained to great perfection in Phrygia (probably at Hierapolis, Dindymum, Fessinus, etc.), and Lydia (at Sardes, and [probably Mæonia]; and into Phœnicia (at Sidon and Tyre), and the island of Cyprus, where the primitive Nilotic as distinguished from the archaic Euphratean, type of these textiles was perpetuated later than elsewhere in the East.\* On the destruction of Nineveh and Babylon the manufacture, after flourishing for a while at Susa, was taken up with great activity at Alexandria, and also at Seleucia, Ctesiphon, and Al-Modayn, and from Alexandria was imported into Western India; and from Al-Modayn and Ctesiphon and Seleucia, as earlier from Susa, if not still earlier from Babylon, into Southern India. Finally, the Saracens and the Seljuki, and Osmanli Turks, and other Tartars who followed the Saracens in the propagation of the Empire of Islam, established the manufacture at Kufa, as the modern representative of ancient Al-Modayn, Seleucia, and Babylon; at Aleppo and Damascus, at Baghdad in supersession of Kufa; at Cairo (the modern representative of ancient Alexandria, Thebes, and Memphis); at Kairwan (the modern representative, as regards the ritualistic arts of Northern Africa, of ancient Carthage); at Cordova in Spain; at Ushak (Brousa), and Koula (the modern representatives of Sardes, Mæonia, and Dindymum), in Asia Minor; at Ardebil, Ferahan, Kermanshab, Goskhan, Shufter (the modern representative of ancient Susa), Shiraz, Murghab, Teheran, Mashad, Herat, Subzawar, Sennah, Yezd, Kashan and Kirman in Persia\*; at Samarkand, Bokhara, Khival,

\* The modern town of Sultanabad, in Irak Ajmi, is now the chief centre of the carpet manufacture of North-Western Persia.

and Yarkand in Central Asia; at Kabul, Afghanistan; at Quetta in Baluchistan; and at Jamu, Hyderabad (Sindh), Shikarpur, Khyrpur, Lahore, Fathipur, Agra, Allahabad, Benares, Mirzapur, Morshedabad, Gorakpur, Patna, Arcot, Ellore, Nellore, Masulipatam, Warangal, Bellary, Bangalore, Ahmedabad, and elsewhere in India.

And wherever throughout the modern Mohamædan world of the East they introduced it, they employed in the decoration of their sumptuary textile fabrics, and particularly of their carpets, the same ancient Euphratean types of embroidered, or inwoven, genii, seraph beasts and "Trees of Life," and the same floral diapers, of the knop and flower pattern, with the same borderings of sea and cloud scrolls, river meanders, mural gradines and chevrons, as are sculptured on the Nineveh marbles and enamelled on the tiles of Susa; these strictly emblematical devices, as ultimately drawn in faultless beauty, but unfortunately without due reference to their spiritual pre-figuration, by the Greeks, having also, for over twenty centuries, furnished the inexhaustible types of conventional ornamentation to the architects, sculptors, painters, and artistic handicraftsmen of the entire ancient pagan and modern Christian West. Where the orthodox Suni or non-Aryan form of Islam prevailed, as in Arabia and Central Asia, the animal types were eliminated from Saracenic art; but where its schismatic Shia or Aryan form was developed, they survived, as in Persia and parts of India, as partially also in the Suni countries of Islam, which, before their conquest by the Arabs, had been brought under intimate and enduring Aryan (Hellenic) influences—namely, Egypt, and, in a less degree, Northern Africa generally, and Syria. But even in Asia Minor the drawing of the "Tree of Life," in the local carpet manufacture, is still severely Euphratean in character, while the carpets of the Caucasus (Daghestan, Kazak), Kurdistan, and Central Asia, including Yarkand, alike in the details of their conventional ornamentation and their brilliant and harmonious coloring, are, we may surmise, absolutely identical with those of ancient Assyria and Babylonia. After these, the wonderful carpets of Bangalore (Malabar) probably approach, in their bold scale of design, and archaic force of coloring, nearest to their Euphratean prototypes. The old blue and red chequered cotton carpets (sattranjis) of the Mahrattas, and the gaily striped, or otherwise mat-patterned, cotton rugs (daris) of Kattyawar, Gujerat, and Rajputana, have in their crude primitive designs, and almost prismatic colors, black, orange, red, yellow, green, blue and white, preserved their ancient Egyptian physiognomy of the period of the Ptolemies, without the slightest change to the present day, while the Indian susni, or counterpane, embroidered with white water lilies, has preserved in its name the record of its original importation from Susa—i.e., the "City of Lilies." There need be the less difficulty, therefore, in coming to the conclusion that the grand, and in India quite exceptional type of the magnificent carpets of Bangalore, is to be traced back through a direct descent of over 2000 years to the spacious palaces of Susa and Babylon.

### EGYPTIAN COTTON.

The American consul-general at Cairo recently gave an interesting resume of what is known about Egyptian cotton. This plant was known to the ancient Egyptians and grew in that country in a wild state. Herodotus mentions a plant which bore flowers of a pinkish color and a fibrous fruit. It is thought the seed came from the far east, as the plants gave a woolly product of short and weak staple. It was only in the early part of the present century that the cultivation of cotton began to extend and exotic seed to be imported. Mako and Jumel were the names given to the new product, which was of a white color and of long staple. Mako was the name of a large landed proprietor who especially lent himself to the culture of the new cotton. Jumel was the name of a French agriculturist who first imported seed from America. In France Egyptian cotton is still called Jumel.

As an article of export cotton dates from the year 1821, but during thirty-five years the quantity varied only from 150,000 to

500,000 cantars (cwt. of 98 pounds). A great stimulus was given to this culture by the viceroy, Mehemet Ali. It is said that he planted all the seed he could get on his own land, with successful results, and, being stimulated by the high price obtained for the new fibre in the European markets, he encouraged its cultivation throughout lower Egypt, the soil and climate of which were found to be admirably adapted to its growth.

It was in 1837-8 that this culture really began to take serious proportions. Abbas Pasha I. still further encouraged it. In 1860 the export duty was reduced from 10 per cent to 1 per cent ad valorem, which, of course, helped to stimulate the culture, but the great impetus was given by the American civil war, the high prices at that period causing the cultivation to be pushed to the utmost limits.

Up to our day the Mako Jumel has experienced many changes and evolutions, which are attributed to the nature of the soil. The color gradually became a yellowish brown, and took the name of Ashmouni, from the village of Ashmoun, where this change was first noted.

Many varieties of Egyptian cotton are springing up every year, but the chief, as known to commerce, are Ashmouni, Mit-Affî, Abiad, Bamieh and Gallini.

**ASHMOUNI.**—For many years this quality formed the bulk of the Egyptian crop, but it is now almost entirely superseded by Mit-Affî. In color it was a lightish brown, lighter than the Mit-Affî, and with a staple rather over one inch in length. It is still cultivated in some parts of lower Egypt, notably in the neighborhood of Mehala-el-Kebir, but the acreage of this quality is decreasing every year. In upper Egypt, however, it is more extensively cultivated, as the nature of the soil there is less favorable to the Mit-Affî cotton.

**MIT-AFFÎ.**—The seed of this cotton was discovered by a Greek merchant living in the village of Mit-Affî, where he first planted it, and whence it derives its name. The seed has a bluish green tuft at the extremity, which first attracted his attention. On planting this seed he found that it possessed many advantages over the Ashmouni. It matured earlier, and was therefore much less susceptible to damage from the salt fogs, which are very often prevalent in September. Its chief superiority, however, consisted in the greater proportion of lint yielded to the seed. At first the cantar of 315 rotols (pounds) yielded about 112 rotols of lint, and sometimes even more, but now it has deteriorated and rarely gives so much, generally averaging 105 to 108 rotols. Ashmouni rarely attains 98 rotols. The finder kept the secret for some years, but it ultimately became known. The Mit-Affî is of a darker and richer brown than the Ashmouni. It is of excessive strength, but, except in some districts, the staple is not longer than that of Ashmouni. The districts where it has longer staple are about Cafr Zayat, Chibin-el-Koom, and notably Birket-es-Sab.

**ABIAD.**—Abiad, as its name indicates, is white cotton, and is chiefly grown at Zifta, Mit-Gamr, and to a smaller extent, at Birket-es-Sab. In other districts it is only grown sporadically, and even in the districts above mentioned it is rapidly giving way to Mit-Affî. The staple is much longer than that of American cotton, the bulk reaching about 2 inch in length, while some fine lots are to be found having a length of 1½ and even 1½ inches. The yield is 105 to 112 rotols.

**BAMIEH.**—This quality is yearly degenerating. The form of the tree is quite different from the other varieties of cotton, being tall and not bushy. It is supposed to have been produced by accidental hybridization of the Ashmouni cotton tree and the Bamieh plant, as it resembles the latter in several points. Its chief characteristics are great length, fineness and silkiness of staple, and a rather lighter color than Ashmouni, but generally a greater weakness of staple. The tree, however, is more delicate than the other varieties, and is therefore very susceptible to September fogs. It yields about 100 to 105 rotols of lint per cantar of 315 rotols. The chief districts now producing the best quality of this variety are First, Mansoorah; second, Semnood; and then Mehala-el-Kebir.

**GALLINI.**—This variety has almost entirely disappeared from cultivation, as the quality had deteriorated to such an extent that



it became most difficult to sell. Only one small lot of 122 cantars appeared in the Alexandria market this year, and, I am informed, is still unsold. It has been said that this variety was originally produced from imported sea-island seed, but a competent authority says this is an error. It was first found accidentally at a place called Galleen, in the province of Garbieh, about the year 1863, on land belonging to Haidar Pasha, and from there it spread all over that province. Attempts at cultivation in other districts were not successful, which proved that its proper development depended entirely on the quality of the soil. Though very fine, silky and strong, it differed greatly from sea-island, being of a brown color instead of white. Many attempts have been made to introduce the culture of sea-island cotton in Egypt by importing seed from the United States, but all experiments failed. Although the cotton produced was very long and fine, it was so weak in staple that all spinners condemned it.

### STAINS IN TEXTILE FABRICS.

DR. H. K. TAVARIA, IN THE "INDIAN TEXTILE JOURNAL."

Stains in textile fabrics which can be referred directly or indirectly to the process of sizing, are in the majority of cases due to mildew. There is another class of stains which may appear in cloth and become a source of perplexity to the manufacturer, especially as its true nature is not wholly suspected at the outset. For convenience, the latter class of stains may be referred to here as chemical stains.

There are some differences between mildew stains and chemical stains. A mildew stain, however small, if visible to the naked eye, can scarcely exist without penetrating into the tissues of the fabric; the fungus grows not only around but within the individual fibres. On the other hand, a chemical stain exists on large surfaces and is entirely superficial. A mildew stain is a growth of a plant, which, however, breathes like an animal; a chemical stain is the result of a combination and re-arrangement between the atoms of substances found together in that situation. Accordingly, mildew invariably undermines the strength of the fabric, chemical stains often affect it by little more than their unsightly appearance. Antiseptics, eminently useful in obviating the former, are entirely useless for the latter class of stains.

Although mildew is responsible for the majority of stains, probably more is put down to it than should be, as in the following instance: A short time ago the writer had an opportunity of examining a sizing composition, which was said to give strength (?) and weight in yarn, but which invariably produced dark scattered stains in cloth—a defect which, it was believed, could be got rid of by antiseptics. On examining the composition, it was found to contain, among other ingredients, a bleaching mixture with a mineral acid. In studying stains in textile fabrics, examination with the microscope has usually to be supplemented by chemical analysis. The one without the other can scarcely give conclusive results. This is especially the case with old specimens, where the fibres of a fabric have undergone much disintegration. In such it is scarcely possible to trace the fungus, if any, without the help of certain reagents, and even with these the results are often doubtful. A very interesting specimen of mildewed cloth was recently shown to the writer, in which the fungus could not be definitely traced with a microscope. Chemical analysis was then resorted to, which gave negative results, including absence of the usual antiseptic. The two kinds of examination combined left little doubt as to the nature of the stains.

It would appear that in sizing the above specimen, a so-called antiseptic has been used. Probably the old mistake was once again repeated, of adding magnesium chloride, which has feeble antiseptic, but powerful deliquescent properties, to the sizing mixture, with the intention of guarding against mildew. In a case like the above the mistake would pass unnoticed, if the sizer adds—he usually does—some zinc chloride, a powerful antiseptic, to the mixture, along with the sulphate of magnesium, with the object of weighting the cloth.

The large consumption and low "tender" rates of zinc chloride would naturally lead to the supply of a substance that is far from pure. Besides other ingredients, practically harmless, a cheaper chloride of iron may be mixed with the zinc chloride. This may account for one class of iron stains in cloth. A sizing master, who is also the weaving-master in the local mills, without being a trained chemist, should be able to ascertain that he gets the pure article. Some simple chemical tests are accordingly added.

*Iron Salts.*—For practice, iron in solution may be obtained by boiling a piece of iron wire in a test-tube with hydrochloric acid, or by dissolving a piece of green stone (sulphate of iron) in water. To answer the following tests the solution must be neutral or slightly acid. A black precipitate with the sulphide of ammonium—an inky appearance with gallic and tannic acids—forms prussian blue with either the ferrocyanide or the ferricyanide of potassium.

*Zinc Salts.*—A neutral or faintly acid solution will answer the following tests: A white precipitate with most reagents; for example, ammonium sulphide, caustic potash, carbonates of soda and ammonia, phosphate of soda, etc.

*Magnesium Salts.*—Common magnesium sulphate is often adulterated with zinc sulphate. The pure salt (Epsom salts) will give no precipitate with the sulphide of ammonium, but a white one with an alkaline phosphate or carbonate, to which a little ammonia and chloride of ammonium are added to favor the precipitate.

*Lime Salts.*—Calcium, which occurs in bleaching powder, behaves with the sulphide of ammonium and the alkaline carbonates and phosphates like magnesium. It differs from the latter, as it gives a white precipitate with the oxalate of ammonium, especially after neutralizing the solution.

*Acids.*—The two acids which commonly occur in combination with the above metals are hydrochloric and sulphuric acids. Nitrate of silver and chloride of barium respectively, give white precipitates with these acids. A word of precaution may not be unnecessary. Similar reactions are given by other metallic salts with the same reagents, further differentiating tests are then required. It is necessary that the user ascertain the purity of his chemicals. The writer remembers the inconvenience caused by a specimen of hydrochloric acid which indicated the presence of iron in everything tested with it for want of the above precaution.

### ENAMELING WOVEN CLOTH.

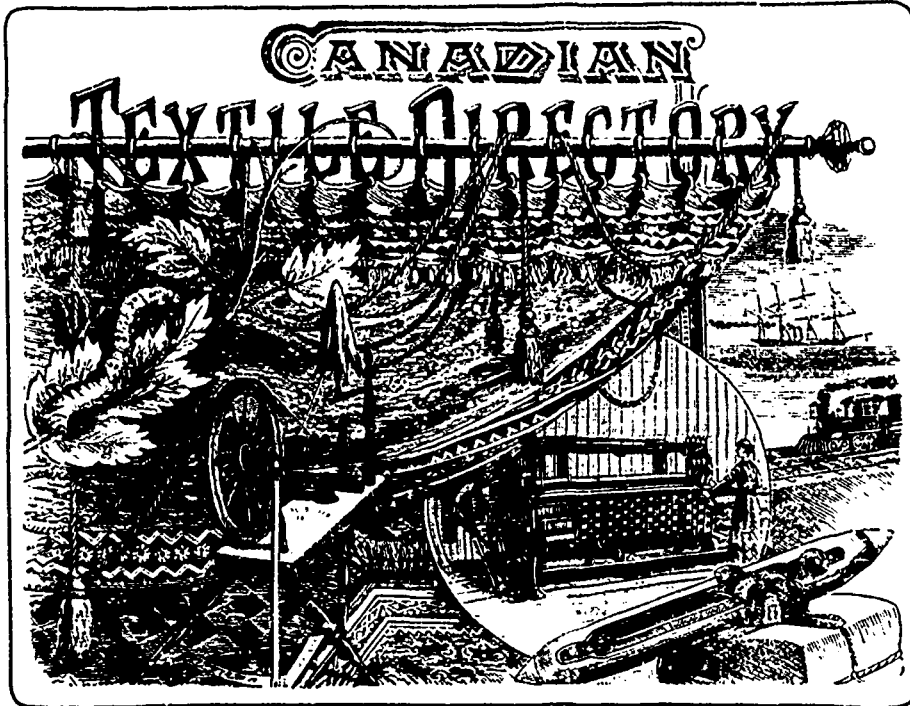
DESCRIPTION OF THE PROCESSES REQUIRED TO DO IT.

A process employed in France for applying a coat of real enamel to woven material is described in a recent issue of *L'Industrie Textile*. It entails three operations—the making of the special enamel, the preparation of the cloth to receive it, and its application.

*The Enamel.*—A square of fine porcelain is covered with a light couch of chalk. A design in finely ground enamel is laid down on this after the fashion of ceramic work, taking care to leave a slight space between the colors so as to prevent them from running together in the subsequent baking. This operation is effected in an open muffle furnace, as in enameling on copper, and when completed the enamel detaches itself completely from the tile. It is washed free of chalk in acidulated water, and finally washed thoroughly in fresh water and dried.

*Preparation of the Fabric.*—A satinete, or any colored tissue that may appropriately be decorated, is treated with many successive coats of caoutchouc in solution until it is completely impermeable. It is then allowed to dry. The caoutchouc is dissolved in benzine to a syrupy consistency.

*Application of the Stuff.*—A solution of caoutchouc in benzine is made, but much thicker than before, almost a paste being made. The enamel is glued on to the cloth with this preparation, taking care to leave a slight space between the different elements of the design. The outer circumferences of the enamels are cut by hand or with a stamp after the fashion of braid, and finally sewn on to the cloth with gold thread or silk, or any other decorative material of the sort.



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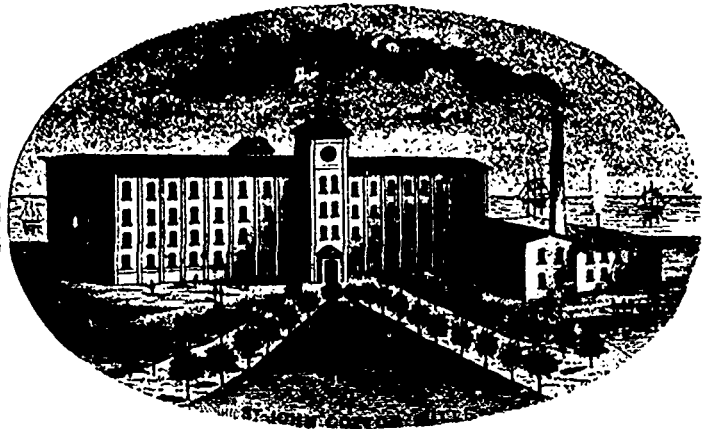
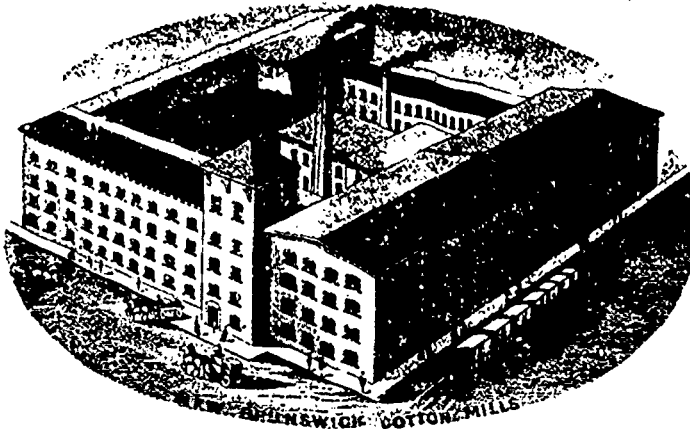
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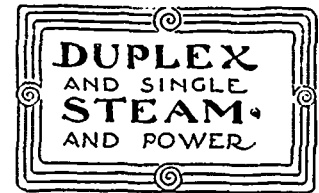
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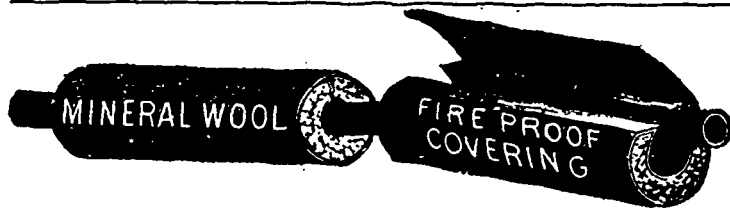
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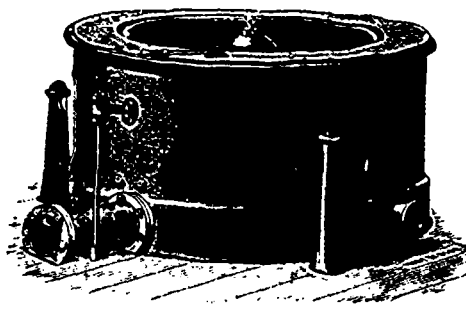
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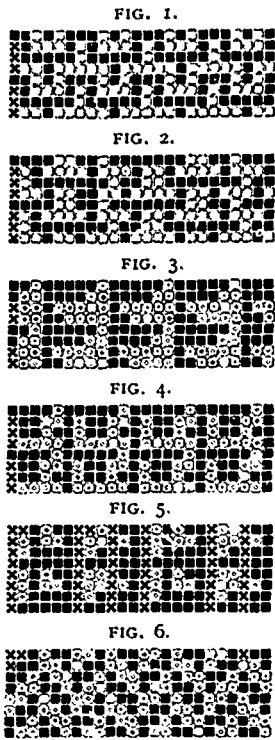
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# Textile Design

An American designer gives the following styles suitable to the summer of 1895, and says, by way of comment: The indications now are that all suitings, in either worsteds, cassimeres or chevots, will be in small checks, the warp being composed of dark and light colors, in solids, mixes, D. and T., or fancy yarn, enlivening the pattern by novelty yarns of suitable color. In their effects it depends entirely on the combination of colors, as also proportion that colors in warp stand to filling. By transposing the colors the same weave and harness draft will produce a new effect with every change, as is shown in drafts 1 to 5 inclusive. These are color effects. Fig. 6 is the chain draft. Straight draw on twenty-four harnesses.

No. 1	warp, 1	dark, 1	light—	Filling, 1	dark, 1	light.
" 2	" 2	" 2	"	" 1	" 1	"
" 3	" 3	" 3	"	" 2	" 2	"
" 4	" 1	" 2	"	" 1	" 1	"
" 5	" 2	" 4	"	" 2	" 2	"
	" 4	" 2	"			



## BALES OF WOOL.

There is quite a variety in the weight of bales of wool and the method of doing it up for market. To begin with our own country, the bales of pulled wool of the Maritime Provinces run from 180 to 200 lbs., and pulled of Ontario and Quebec 220 to 240 lbs. Maritime Province fleece wool averages about 200 lbs. per bale, and Quebec about the same, but Ontario fleece runs from 225 to 230 lbs. Manitoba, North-West, and British Columbia press-packed wool averages 220 lbs., while wool from there known as foot-packed (done up in bags)

varies from 250 to 300 lbs. In the United States bales from the various wool States are given as follows: Ohio wool per bag, as received in Boston, is 200 lbs.; Michigan, 220 lbs.; Indiana, 175 lbs.; Texas, 210 lbs.; Utah, greasy, 325 lbs.; Montana, greasy, 290 lbs.; California, scoured, per bale, 400 lbs.; California, greasy, per bale, 500 lbs.; Eastern Oregon, greasy, per bale, 540 lbs.; Valley Oregon, greasy, per bale, 520 lbs.; Territory, per bale, 300 lbs.

English fleece wool comes to market in bales of 480 lbs., combing 600 lbs., while Irish bales contain 900 lbs. East India averages 330 lbs., and wools received from the Mediterranean (such as Korassan, Turkistan, etc.), average 225 to 300 lbs.; Donskoi, 500 lbs.; Australian, 350 lbs.; Cape, 400 lbs.; Buenos Ayres and Montevideo varies from 600 to 1,000 lbs., but Peruvian and Chilian, which is brought down from the interior on mule backs, is done up in small parcels, called billets, weighing only 8c to 120 lbs.

## BRITISH TEXTILE TRADE WITH CANADA.

The following are the values in pounds sterling of the exports of wool and textile fabrics from Great Britain to Canada for March, and for the three months ending with March, as compared with the same periods of last year:—

	Month of March.		Three months ended March.	
	1893.	1894.	1893.	1894.
Raw wool.....	£1,095	£ 206	£ 3,910	£ 2,090
Cotton piece-goods.....	52,817	30,090	204,910	164,534
Jute piece-goods.....	13,940	5,833	35,490	27,737
Linen piece-goods .. ..	13,448	7,774	43,110	40,639
Silk, lace.....	2,752	3,424	21,936	15,481
" articles partly of ..	4,605	2,788	19,450	9,661
Woolen fabrics.....	32,122	15,258	110,024	70,787
Worsted fabrics.....	58,011	36,416	224,597	163,598
Carpets.....	41,800	27,338	108,820	89,358
Apparel and slops.....	41,389	24,736	89,919	66,672
Haberdashery.....	30,124	19,938	91,873	66,029

THE latest forecast of the Indian cotton crop indicates that the yield per acre will be about 15 per cent. over that of last year. There are 2,050,000 acres more under cultivation in cotton than in 1892.

REPORTS from Chemnitz give a very unsatisfactory account of the glove industry of the town and district. There are no signs of an early improvement visible, and failures are still of frequent occurrence.

THE ramie plant was introduced into Fiji twenty years ago and is now well acclimatized. As soon as machinery is brought in to decorticate the fibre, the Fijians propose to develop its export.

THE textile trades of most European countries are in a bad way and have been for some time. Italy, Portugal and Spain have suffered much from depression, and in the first named country within the past year a number of old houses have gone out of business rather than have more capital swallowed up in unprofitable trade.

A FRENCH chemist, Errani, has brought out an idea which may find a place in the dyehouse. This is the application of the sand blast in putting colors on felts, plush, and similar goods. He blows into the fabric with the sand-blast mineral colors mixed with dryers and thinned with turps. For example, a green felt, just brushed up a little, was treated in this way with cinnabar, and red effects on a green ground were obtained. By laying cut-out patterns on the fabric any design can be blown on. Goods thus prepared, it is stated, keep their softness, can be brushed or ironed, and stand ordinary washing perfectly.

THE new Canadian textile tariff seems to satisfy the British manufacturer and shipper, if it does not please the Canadian trade. The *Textile Manufacturer* of Manchester has this to say of it: "Generally speaking, the effect of the new measure will be beneficial for the trade with Great Britain, and the reductions, as has been pointed out, are almost entirely on those lines of goods which Canada imports from this country. The examples given show how sweeping are the reductions in textile fabrics. They show also that the Canadian Government is seeking to substitute ad valorem duties for mixed specific and ad valorem duties."

SOME German authorities recommend the use of a stock vat in indigo dyeing. This is prepared by grinding 15 pounds of indigo thoroughly well in water; for the treatment of this quantity of dyestuff a vat of 70 to 80 gallons capacity is required. There is taken 15 pounds indigo, 18 gallons water, 30 pounds quicklime slaked with 6 gallons water, and 16 pounds zinc dust stirred in 3 gallons of water; when thoroughly mixed, make up to 30 gallons with water, and allow to stand. To make a vat from this take a dye vat of 160 gallons capacity, 4 pounds lime, 1 pound of zinc dust and 15 gallons of the stock vat; stir, and allow to stand for 12 hours, when it is ready for use. Any sediment in the stock vat is left in to be worked up with a new lot of indigo.

THE name of maulbeerlein is applied in Germany to a peculiar kind of fibre prepared in Italy from the bark of the mulberry tree, concerning which some interesting details are given in the report of the Austrian consulate at Venice. From this it appears that a quintal of mulberry bark costs 10 lire, and yields some 20 per cent. of fibre, one kilo of which, including cost of production, is worth 1.20 lire. The inventor, M. Pasqualis, has a factory at Vittorio, province of Treviso, which gives occupation to 80 hands, and is carried on by means of 30 looms, turning out about 45,000 metres of stuff per annum. The manufacture has been going on since 1887, when the new textile was first brought to public notice at an agricultural exhibition held in Vicenza. The material has thus far been used principally for damasks, gobelins, etc., for the decoration of walls and for upholstery purposes; and among the various qualities of superiority claimed for it are that it is ten times as tenacious as American cotton, and that fabrics made of it are characterized by great durability, gloss, and permanency of colors.

ONE of the best informed of German textile papers recently made a few remarks on the present position of English textile industries, in the course of which it is pointed out how very far ahead of Germany England still is in this respect. The total number of spindles in Germany is estimated at only 5,400,000. England, on the other hand, has not fewer than 45,000,000, or more than eight times as many. Bolton and the surrounding district boasts of 5,000,000 spindles, or nearly as many as the whole German Empire. It is evident from these facts, if they are correctly stated—and there is no reason to suppose that a patriotic German would either understate the achievements of his own country or overstate those of England—the distance to be traversed by the German cotton spinners before they are abreast of their English brethren is very considerable.

THE new artificial silk called *Soie Francaise*, made under the Vivier's process, was recently tested by a committee of experts in Manchester, and the following is a summary of the results of their examination: "Soie Francaise silk is in character white and brilliant. In elasticity about half that of silk. In combustibility less than cotton. (Would remark that the denitrating process is held by special patent, and is retained through all the processes of manufacture, dyeing, &c.) In dyeing will take all shades, and dye in cold water or hot, the latter not exceeding a temperature of 60°C. In dyeing no change takes place in the fabric. No loss, as results in the boiling-off of natural silk. Will resist the action of boiling in caustic potash better than natural silk. One kilo. of cellulon will produce one kilo. of Soie Francaise. It was impossible in our inspection of what may be called experimental works to form exact calculations under this head, but we believe that with efficient machinery and economical detail the Soie Francaise could be produced at a very low price." Meanwhile the silk growers of India, China, Japan and Italy will continue on the even tenor of their way.

LATEST reports to hand from the United States show that the cloud of depression there has not lifted to any extent, despite the sanguine hopes so frequently expressed in the American papers. The large trade sales in New York, which were quite a success for the past three or four years, disclosed a general weakness in prices this year. The aggregate quantity of flannels is below that of previous years, while prices were 20 per cent. lower on low grade goods, and 30 to 45 per cent. lower on high grade goods. One cause of the depression there is the uncertainty of the tariff. The wrangling that is now going on in Congress over the tariff shows how unpatriotic the politicians can be when a party advantage may be gained by delay, even though that delay is bringing calamity upon hundreds of thousands of their own citizens, and damaging the general interests of the country. In our own country, the delay in the settlement of the tariff—though we trust the motives and causes of the delay are not so criminal—is also having a depressing effect on trade and manufacturing, especially in the woolen and cotton branches.

It is said that nearly every English manufacturer of sewing cotton has been losing money owing to the cutting of prices that has been going on lately. The *Drapers' Record* referring to this says: "Comparing the price lists of the three firms mentioned, we find Chadwick's prices vary from 6d. to 5s. less per gross than those of Coats', while Clark's are from 1s. 3d. to 7s. per gross below those of Chadwick's. A gross of 200 yards six-cord reels of Clark's make can now be obtained for 11s. 6d., while Chadwick's and Coats' prices for similar articles are 14s. 6d. and 16s. respectively. Under these circumstances it is evident, unless some mutual agreement is arrived at between the three competing firms, that Coats' and Chadwick's must reduce their prices to those of Clark's. for the consumer, although slow to change, will sooner or later be forced to buy the cheapest goods. The duration of the conflict will necessarily depend on the reserve forces held by the rival companies; but if continued to the bitter end, the victor will have little cause for congratulation. In the meantime the trade is thoroughly disorganized, and shareholders are beginning to take alarm. The trouble seems to have arisen from the fact that litigation has been going on between Coats' and Chadwick's about a label the latter were issuing. Chadwick's have, however, disclaimed any intention of imitating Coats' label and the case has now been dropped. But before the two litigants came to their senses, the Clark's had taken a hand in the cutting business—a business easier to start than to stop.

In an address before the Macclesfield School of Science, W. B. Brocklehurst called attention to the progress Japan is making as a competitor with European manufacturing countries in silk and other goods. He thinks that with the advances Japan is making in other ways, that country will cut into the trade which Macclesfield once had. The Japanese artisan can exist on two or three meals a day of rice, and the element of labor is a small item in the cost of production compared with European work. Mr. Brocklehurst thinks the only safety of the European manufacturer is in the production of cloths where "superior skill in drawing, designing, and coloring make them independent of the cheap cloth of the East." It strikes us that if this were all the British, German, and other European manufacturers have to hang their hopes upon, their chances would be rather slender. All the visitors to Japan with whom we have ever talked, and all the Japanese we have ever met, lead us to consider these Orientals the most artistic people in the world. Every Japanese is a born artist. Flowers, birds, trees, and the objects of nature are interwoven with his being, and form the stock of the similes and figures of speech of his everyday language, as well as the ornaments of his mechanical work; while some of the landscapes of Japanese artists are unequalled for dreamy beauty. Japanese works of art do not strike the Western mind with wonder at first, for the spirit of the East has characteristics widely dif-

fering from ours; but our appreciation of them grows with study, and it appears likely that Japanese art will command more general admiration as time goes on.

#### NEW YORK NOTES.

The *Dry Goods Economist* has the following as hints of what is being shown in New York:

- Pale reed and lime-green suede gloves.
- Hat brooches of jet spangles and beads.
- White untrimmed duck and linen suits.
- Black and white lace covers for parasols.
- Irish lawns in narrow and medium stripes
- Glacé small figured satins for evening wear
- Combination costumes of crêpon and checked silk.
- Four-inch satin ribbon for stock collars and belts
- Driving coats and jackets of tan and drab cloth.
- Tulle plain, spangled, jetted and accordion-plaited
- Sheer embroidered muslin for trimming silk dresses
- Ruffles of black point d'esprit on colored silk dresses.
- Black velvet violets having yellow satin centres.
- Light-colored crepè waists made up over taffeta silk.
- Bolero jackets of tulle covered with iridescent spangles
- White satin wheat sprays for trimming white chip hats
- Checked silks for entire costumes and combinations.
- Shaped pieces of jet on net for skirt and bodice trimmings.
- White, pink and pale-blue linen and chambray chemisettes
- Light shades of taffeta silk in tiny satin stripes, self-colored
- Black moiré capes of every possible size, shape and trimming
- Black and colored chiffon and silk muslin for vests and yokes.
- Fancy soft travelling caps in tan, navy, gray, brown and black.
- Shaped veils gathered at the centre top to fit over large brims
- White crêpe cravats having tiny colored dots of silk embroidery.
- Yokes and epaulettes of heavy écru lace over figured silk gowns.
- Black bootee hose having white tops for black and white costumes.
- Rich black gros grain ribbon for deep and light mourning hats.
- No. 30 satin ribbon for crush belt and long ends on the left side.
- Canvas-woven woolen dress goods for light summer street gowns
- Light moiré percalines for lining semi-transparent dress materials.
- Wide and narrow Valenciennes laces for trimming fine cotton dresses.
- White ground chiné taffetas with small floral blossoms for odd waists.
- Black and white chiffon waists to wear with colored figured China silk.
- Large white straw hats having an inch band of black straw on the edge.
- White mohair dresses trimmed with guipure lace and colored satin or velvet.
- Silver studs, links and collar buttons for the tailor-made shirt waists for ladies.
- White moiré for facing revers, vests, etc., on light and dark dresses and jackets.
- Mixed black and yellow Tuscan straws having a trimming of black lace and ribbon and yellow flowers.
- Lace sleeve puffs and corsage with deep cuffs and skirt of fine plain woolen material or a heavy silk

## Foreign Textile Centres

**MANCHESTER.**—The cotton, yarn, and cloth markets here continue in the state of quiescence which has prevailed of late. The cotton market yields no sign of increased animation, and in the absence of this, and in view of the slightness of demand from the most important of our foreign markets, activity as regards yarns and cloth cannot be looked for. Certainly the tendency in yarn is to a falling off in prices. Apparently spinners have but little to justify them in holding back, for the prospects in the immediate future are not encouraging. As might be expected, in most cases spinners are open to discuss terms, the result being that, with the exception of the best marks, prices for yarns are easier. Until the Indian demand improves, the yarn market here—in the absence of important movements in cottons—is bound to exhibit signs of weakness. As regards cloth, the looms in operation are probably not fewer than during the past weeks. Many manufacturers, however, are finding their order books in an unsatisfactory condition. New business has become a necessity, if the machinery is to be kept in motion. Hence a drooping tendency as regards prices is exhibited. Manufacturers, as spinners, are finding that prices cannot be maintained if stocks are not to accumulate. To postpone booking an order is often to lose it, as one's competitors are open to make concessions. The easier terms obtainable have enabled a number of small orders for the Eastern markets to be put through, and have also encouraged buying on the part of the home trade houses. This week, up to date, fewer orders for the smaller foreign markets have been heard of, as compared with some recent weeks. While so little new business has been coming from the great Eastern markets, these smaller outlets have been a godsend to many manufacturers. It is satisfactory to note that the home trade seems prosperous. This fact is attested to both by what one hears and sees in the warehouses, and also by external signs. Among the latter may be mentioned the increased traffic receipts shown by the railways, which, as regards goods, is always a hopeful sign, though perhaps not necessarily denoting actual improvement in the dry goods trade.

**BRADFORD.**—The increased amount of machinery now running in the Bradford district must be absorbing considerable quantities of wools and tops of various descriptions, but this is being done in a wonderfully quiet manner, and a casual visitor on 'Change here would be struck with the general indifference displayed by both buyers and sellers. Stocks of merino tops do not decrease, and are so heavy that all buoyancy is for the present crushed out of this department of the market, and even crossbreds, though firm, are somewhat slower of sale. Some spinners report more doing in coating yarns, and the demand from Huddersfield is much better, but there is little new business coming to hand for twofold export yarns. In piece-goods the reports from both mill and warehouse are somewhat at variance, as in some quarters I hear of considerable improvement in business in the last ten days, whilst in others there has been less doing and returns are disappointing. The explanation of this state of things seems to lie in the fact that in some districts taste seems to be reverting to some extent to the small jacquard effects in all-wool goods which commenced the season so well, and that tweeds are therefore being rather less inquired for, and so houses are benefiting just in proportion to the supply they can command of what happens to be wanted. For the dress trade in the coming autumn, the vast quantity of low-priced tweeds which are being produced is certainly causing some uneasiness in the minds of those buyers who cater mainly for a high-class trade, and who have largely bought high-priced tweed dress goods, as it seems probable that the next move of the leaders of fashion may be to get on to something as completely distinct from tweed effects as possible. Leading makers here are already preparing some very stylish all-wool costume materials in piece-dyed goods, with a close, smooth finish, intended to supplant tweeds. The improvement in the flannel trade recently noticed still continues, and a business considerably ahead of last year has already been arranged; but it has not been found possible to establish any im-

provement in price. The flannelette trade is quieter, not, I think, as a result of the showing-up of its all-cotton composition, but principally on account of the cheapness of flannel and the low price of wool. In the home trade woolens, business improves slowly, for though orders are being given with greater freedom for fancy suitings and smart cheviot tweeds, cloths of a plain character are very quiet. Some manufacturers are certainly busier than for some time past; but this is not general, and there is still some working of short time. Shipping trade is very quiet, although the prospects of the Canadian trade under the proposed new tariff basis are good, as Huddersfield productions will be benefited to something like 20 per cent.

**LEICESTER.**—There is not much doing in the wool market, the turnover being unimportant, but prices on the whole are firm. Supplies offering are only moderate, and the consumption shows a steady increase, but as stocks are reduced consumers are content to take small lots to meet immediate requirements. Small lots of the new clip are coming in, and there is every prospect of a heavy business during the next few weeks. Skin wools are cleared off steadily, but colonial wools are rather a dragging business. Orders for yarns are larger, and stocks are under the average. Cashmere and lambswool yarns have a good average turnover, but cottons are flat. The hosiery industry revives steadily, and stocks of light summer fabrics are small. Elastic web fabrics are a dull trade, but there is more doing in specialties for home and Continental markets.

**NOTTINGHAM.**—A quieter tone prevails in the lace market, the demand for Venise and Irish guipure laces having fallen off somewhat suddenly. The Levers branch is dull. Silk laces are only in very moderate request, and there is no appreciable increase in the sale of tattings, trimmings, and embroideries. Although some firms have good orders on hand for lace curtains, others complain of the condition of trade. Stiff foundation nets are only in moderate request. Bobbin nets for embroidering sell rather slowly at late rates, and the demand for tulle is quiet. Silk veils and falls still sell pretty freely. The hosiery trade is in much the same condition as last week, and manufacturers are not fully employed. Natural wool underclothing sells pretty freely.

**LEEDS.**—There is not a great deal doing in the woolen cloth trade, although it is satisfactory to note that prices continue steady. During the past week a few good orders have been received for Canada, Switzerland and Roumania. French manufacturers have no longer a market in Switzerland owing to the protectionist policy of their government, and our worsteds and woolens are gaining favor in Roumania every season. Prospects of a much better trade with the Brazils are now particularly bright, and a fair business continues to be done with the Argentine, but room is still left for extension. As to the United States there is nothing but suspense and disappointment. There are no large sales to day of low fabrics for home consumption. In covert cloths and flannels there is no change. For next winter some fairly good orders are given out, but additions will no doubt be yet largely made to the existing ranges of patterns. The turnover in the ready-made clothing trade is now about a moderate average.

**HUDDERSFIELD.**—Little improvement is to be noted in this market, the attendance of buyers having been small. Vicunas, serges and worsted trouserings have been in good demand, but of cheviots and tweeds only medium and low makes have been much in request. Prices are unusually low in all branches, and the few winter orders which are heard of now and then, it is stated, are taken at a little less than last year's prices. Neither for the Continent nor for the United States is there much doing. The sales to Canada are smaller than they have been any week this year before. Yarn spinners are fairly well employed, but at barely remunerative prices.

**GLASGOW.**—Varied reports are to hand concerning the South of Scotland tweed trade. Some makers have as many orders on hand as will keep them going for some time, while others state that bookings are very scarce. On the whole it is generally conceded that the trade has not been so quiet for some months. Goods are extremely low in price, but this does not seem to affect the demand

much. Spinners are busy, but the yarns are for the Glasgow and Bradford markets. The calico printing and Turkey-red dyeing industries are in a very depressed state just now in the Vale of Leven.

**BELFAST.**—Quiet business is reported among the linen houses, the spirit of extreme caution still finding favor amongst buyers in almost every description of goods. The only exception observable is perhaps the steady consumption of tow-made qualities and holland, and for the makers-up there is a demand for unions, which has kept about equal to the quantity produced. Beyond this, there is an absence of speculation, and an apparent determination to adhere to operations upon the safest lines, and to replenish frequently from the stocks of manufacturers. There is an increasing demand for linen and union materials for ladies' dresses, and attention has been devoted to bringing out a greater variety of artistic effects than formerly, in deference to modern ideas of tone and coloring.

**DUNDEE.**—There is not yet any improvement in the market for either jute or flax goods. In jute very little is being done. Any lots selling are in buyers' favor. Yarns are not lower in value this week. For 8 lb cop at 1s 4d it is not possible to buy jute suitable, save at a smart loss, and spinners simply refuse to reduce their quotations further, preferring in numerous cases to stop machines. Fine warps are held for 1s 7½d. for 8 lb., and, for extra 7 lb., 1s. 7d. is the price. Heavies are rather easier again, all except the best spins, which fetch a relatively higher price than is usual. Flax in all positions is difficult to sell. The news of the disaster from Belfast tends to depress the flax market, and spinners act with the utmost circumspection. Linen yarn is not lower this week; for the best warps 1s 11d. is paid for 3 lb. Tows are weak, especially common wefts, and these are being made at a loss. A bad feature in the market is the continued selling by bleachers of these yarns at under spinner's prices. The bleaching trade, which is an important branch of the linen industry, is specially depressed. Jute cloth is weaker. Very large contracts are made by Calcutta export houses to the United States for future delivery at "bear" prices, which Dundee cannot look at.

**LYONS.**—The manufacturing situation has remained unchanged, and, if anything, is slightly improved, says the correspondent of the *Dry Goods Economist*. The looms employed on fancies are not many, but small-checked taffeta and moiré keep up at a good level of production, while many looms are also engaged in making satins. Considering that fall orders have been placed only sparingly, if at all, the condition of the employment in the industry may be called satisfactory. Moiré continues in movement, but the level of demand has lowered as far as quality is concerned, and lower grades and also piece-dyed qualities form the bulk of the movement. To these are added gaufré satins in moiré imitation, which are also selling. Piece-dyed satins have been taken out of the market in large lots, and will do well for lining purposes, for which striped satins also find a market. Small-checked taffetas are liked and the demand does not give time for stocks to accumulate. Changeable taffetas are in fair movement. Colored gros grain and faille are not neglected. Fancy crêpes made in embossed pongee sell well. Ribbons are fairly active, with a fair movement of staples. A good demand for moiré styles is reported with check and stripe effects in second place. Velvets are not very active, but some orders for fall have been placed in silk pile, as well as in chappe pile qualities, for Paris and for export. The volume of these orders has not been large, although velvets are expected to find good consumption next season.

**CREFIELD.**—Manufacturers are fairly busy and are taking their share in the good business which has been done this season, which, after the deceptions of last fall, has turned out to be one of the most satisfactory spring seasons for several years. Manufacturers of dress silks are busy. Deliveries of those goods which have proved good spring sellers are being made, and production is being engaged almost up to the close of the season. Manufacturers of tie silks have had their share of the orders and are also busy. The completion of orders in parasol silks also keeps many looms engaged. Velvet ribbons with satin back are in good demand; in silk ribbons

the demand is also active. The demand for small checks is large, and more willingness is shown by buyers to order these also for later and fall delivery, as they are expected to remain in favor.

**ZURICH.**—The number of buyers in the market is limited and the same neglect formerly experienced for the staple surahs and merveilleux, whether plain or in changeable color, continues. The check effects are attracting all attention and the large demand for these has again increased, and these are now the leading favorites. For the present the small check and stripe are in the front, but there is no reason why the fashion should not develop into larger and fancy patterns and finally work into the regular plaids. Black and colored moiré Francaise continue in demand. Some fancies and novelties are also finding buyers. Black and colored damassés are not neglected.

### SILK RIBBONS.

This promises to be a great season for fantastic drapings and brilliant colors, and, as nothing adapts itself so gracefully to both requirements as ribbon, there is also a great demand in the ribbon trade. Fancy ribbons of all kinds, says the *Warehouseman and Drafter*, are taking the lead, especially those which look like fancy braids, and are used on dresses as braid would be used in trimming, and, being softer than mohair, look better on the finer materials than gorings would do. The desire for moiré ribbons is, if anything, on the increase; and so long as the big cravat bows remain so popular, broad black moiré antique is greatly in demand, both for cravats and sashes, though a broad fancy moiré antique is more used for the latter. Plain broad ribbons are also often arranged as sashes, and soft serges and satin merves where draped bows or soft falling effects are desired. The narrower kinds of moiré—both the antique and the Francaise—are greatly wanted for the bows with which dresses are now plentifully adorned. Loops of still narrower ribbon are used to form collars. It is in the millinery that a fancy kind is mostly used—a mixture of satin and moiré stripe, or (more popular still) a satin with a moiré edge. Broché and moiré ribbons of soft greens and heliotropes are selling very well, although colored moirés are doing better, bright colors and soft ones are all in demand, and even the brightest tints are so arranged that they do not clash one with the other. Dark peach (a very brilliant tint) is one of the favorites this year for plain ribbons and greens of all shades, but the colors are beyond description, and the names equally beyond anyone's grasp, nor do they give any idea of the color they are supposed to describe. Serpentine, Pygmalion, Rousseau, convey no idea of color, though they are the new shades of apricot, brown, and green, and represent really lovely tones and beautiful ribbons of all kinds.

### TO DETECT SILK FROM WOOL.

In order to detect silk from wool or the vegetable fibres in fabrics, the most expert experimenters now recommend the use of caustic soda instead of the process with sulphuric acid, as this has less effect upon the vegetable matter than sulphuric acid would have upon the animal fibres—that is, if a mixed yarn or cloth be subjected to the action of caustic soda, the latter will have little or no effect upon the vegetable matter, while, on the other hand, if treated with sulphuric acid, there is danger of the wool being affected by it before the acid has entirely destroyed the vegetable matter, a necessary guide, therefore, being the proportion of the two materials. Thus, if the cotton or vegetable matter predominates in the sample to be tested, the use of the alkali or caustic-soda test is thought to be preferable, as its effect is to destroy the wool or animal matter without disintegrating the sample, enabling the residue to be washed out without any liability of the vegetable matter escaping. On the other hand, if the animal matter predominates in the substance, better results are obtainable with the acid test—care being necessary, however, in the use of the latter, that it be not too strong, nor be allowed to boil too long, otherwise some of the animal matter may be destroyed.

**CANADIAN TEXTILE IMPORTS FOR THE YEAR ENDING JUNE, 1898.**

*(Continued from April Number.)*

**TWINE FOR HARVEST BINDERS OF JUTE, MANILLA, OR SISAL, OR OF MANILLA OR SISAL MIXED.**

	Lbs.	\$
Great Britain .....	48,768	4,010
United States .....	1,396,133	123,630
	1,444,901	127,640

**TWINE, COTTON.**

	Lbs.	\$
Great Britain.....	2 807	572
United States.....	11,114	2,119
	13,921	2,691

**TWINE OF ALL KINDS, N.E.S.**

	Lbs.	\$
Great Britain .....	241,700	26,732
Germany .....	23,861	3,507
United States .....	66,784	9,699
Other countries .....	9,603	1,342
	341,948	41,280

**TWINE GOODS, VIZ., HAMMOCKS, LAWN TENNIS NETS, ETC., N.E.S.**

	\$
United States .....	5,508
Other countries.....	977
	6,485

**UMBRELLAS, PARASOLS, AND SUNSHADES OF ALL KINDS.**

	\$
Great Britain.....	284,213
Germany .....	4,106
United States .....	3,063
Other countries.....	962
	292,349

**WEBBING, ELASTIC.**

	\$
Great Britain.....	64,768
United States .....	51,180
Other countries.....	6,160
	122,108

**WEBBING, NON-ELASTIC.**

	\$
Great Britain.....	3,421
United States .....	4,024
Other countries .....	40
	7,485

**WHIPS, N.E.S.**

	Doz.	\$
Chiefly from United States..	1,626	5,395

**WOODEN FURNITURE, INCLUDING HAIR, SPRING, AND OTHER MATTRESSES, BOLSTERS AND PILLOWS.**

	\$
Great Britain.....	44,070
France.....	2,528
Germany .....	16,998
Japan .....	2,946
United States.....	244,934
Other countries.....	1,513
	317,989

**UMBRELLA, PARASOL AND SUNSHADE STICKS OR HANDLES, N.E.S.**

	\$
Great Britain .....	5,250
United States .....	2,482
Other countries .....	345
	8,077

**WOOL BLANKETS.**

	Lbs.	\$
Great Britain .....	65,277	21,768
United States .....	3,960	1,786
Other countries .....	961	607
	70,198	24,161

**CASSIMERES.**

	Lbs.	\$
Chiefly from Great Britain.....	116,389	75,454

**WOOL CLOTHS.**

	Lbs.	\$
Great Britain .....	2,249,501	1,683,971
Austria.....	85	76
Belgium .....	1,800	2,796
China .....	9	10
France .....	7 533	7,689
Germany .....	43,675	32,478
Holland .....	302	422
Switzerland.....	1,752	1,166
United States .....	14,769	15,454
	2,319 426	1,744,062

**COATINGS.**

	Lbs.	\$
Great Britain .....	1,257,118	742,322
France .....	645	1,014
Germany .....	8,625	5,548
United States.....	4,172	2,566
	1,270,560	751,450

**DOESKINS.**

	Lbs.	\$
Great Britain .....	358	420

**MELTONS.**

	Lbs.	\$
Great Britain .....	34 037	18,135

**OVERCOATINGS.**

	Lbs.	\$
Great Britain .....	15,187	11,338
Germany .....	510	387
	15,697	11,725

**TWEEDS.**

	Lbs.	\$
Great Britain .....	1,037,609	835,570
France .....	1 763	2,114
Germany .....	8,803	7,478
United States.....	1,853	1,461
Other countries .....	115	85
	1,050,143	846,708

**FELT CLOTH, ALL KINDS, N.E.S.**

	Lbs.	\$
Great Britain .....	12,537	11,992
Germany .....	194	315
United States .....	11,347	12,374
	24,078	24,681

**HORSE COLLAR CLOTH.**

	Lbs.	\$
Great Britain .....	102	32

**FLANNEL, PLAIN AND COLORED.**

	Lbs.	\$
Great Britain.....	234,172	168,041
France.....	25,214	27,559
Germany.....	7,459	6,363
United States.....	5,159	5,731
Other countries.....	1,787	1,611
	273,791	209,305

**KNITTED HOSIERY, SHIRTS AND DRAWERS, N. E. S.**

	Lbs.	\$
Great Britain.....	282,975	272,889
Germany.....	32,841	30,285
United States.....	2,688	4,237
Other countries.....	1,090	1,618
	319,594	309,029

**SHAWLS.**

	Lbs.	\$
Great Britain .....	142,289	155,181
Germany .....	11,476	15,181
Other countries .....	1,416	1,416

**SOCKS AND STOCKINGS OF WOOL, WORSTED; HAIR OF THE ALPACA GOAT, ETC.**

	Lbs.	\$
Great Britain.....	423,437	438,048
Germany.....	20,530	16,645
Other countries.....	1,310	1,480
	445,277	456,173

**FINGERING, KNITTING AND WORSTED YARNS.**

	Lbs.	\$
Great Britain.....	191,499	132,763
Germany.....	35,020	23,045
Other countries.....	14,194	8,136
	241,313	163,944

**WOOLEN, OR PARTIALLY WOOLEN OR WORSTED FABRICS, COSTING 10 CENTS PER YARD OR LESS.**

	Yds.	\$
Great Britain .....	5,338,346	392,520
France .....	12,735	1,058
Germany .....	53,882	4,791
United States.....	8,477	598
	5,413,440	398,967

**DITTO, COSTING OVER 10 CENTS AND UNDER 14 CENTS PER YARD.**

	Yds.	\$
Great Britain .....	2,378,732	298,533
France .....	179,095	23,549
Germany .....	64,542	8,527
Switzerland.....	526	55
United States.....	22,721	3,230
	2,645,616	333,885

**DITTO, COSTING 14 CENTS PER YARD AND OVER.**

	Yds.	\$
Great Britain .....	12,504,337	2,532,489
France .....	1,178,750	272,717
Germany .....	645,927	197,726
Holland .....	13 597	2,536
Switzerland.....	138,420	30,419
United States.....	40 676	12,078
Other countries.....	1,296	434
	14,520,803	3,048,339

**WOOLEN READY-MADE CLOTHING, SUCH AS CLOAKS, DOLMANS, JACKETS, TALMAS, ULSTERS OR OTHER OUTSIDE GARMENTS FOR LADIES' AND CHILDREN'S WEAR.**

	Lbs.	\$
Great Britain.....	453,315	611,543
Germany.....	100,538	300,816
United States.....	14,343	26,037
Other countries.....	2,681	3,890
	670,877	942,286

**READY-MADE CLOTHING, SUCH AS COATS, VESTS, TROUSERS, ULSTERS, AND OUTSIDE GARMENTS FOR MEN AND BOYS.**

	Lbs.	\$
Great Britain.....	85,746	102,989
Germany .....	17,043	25,186
United States .....	2,309	4,429
Other countries.....	1,924	1,429
	107,022	134 033

**WOOLEN SHIRTS, DRAWERS AND HOSIERY, N. E. S.**

	Lbs.	\$
Chiefly from Great Britain	6,168	7,589

**HORSE CLOTHING, SHAPED.**

	Lbs.	\$
From Great Britain and United States .....	450	355

**WOOLEN CLOTHING, ALL OTHER, N.E.S.**

	Lbs.	\$
Chiefly from Great Britain	30,536	39,029

**WOOL CARPETS, BRUSSELS.**

	Yds.	\$
Chiefly from Gt. Britain,	708,654	448,733

**WOOL CARPETS, DAMASK.**

	Yds.	\$
Chiefly from Gt Britain	361	669

**WOOL CARPETS, DUTCH.**

	Yds.	\$
Chiefly from Gt. Britain	96,395	13,059

**WOOL TAPESTRY CARPETS.**

	Yds.	\$
Great Britain .....	1,847,151	579,191
United States .....	31,350	7,962
Other countries .....	1,659	1,407
	1,880,160	588,560



VENETIAN CARPETS.		
	Yds.	\$
Great Britain.....	423	45
WOOL DRUGGETS.		
Gt. Britain and U. States	63	32
FELTS, PRINTED.		
Gt. Britain and U. States	380	75
SMYRNA CARPETS.		
Gt. Britain and U. States	63	130
TREBLE INGRAIN WOOL CARPETS OF 2 AND 3 PLY.		
Great Britain .....	Sq. yds. 47,947	\$ 26,731
France .....	17	188
United States .....	6,032	3,214
	53,996	30,133
INGRAIN CARPETS, TWO-PLY, NOT WHOLLY COMPOSED OF WOOL.		
Great Britain .....	Sq. yds. 40,960	\$ 18,695
United States .....	73,484	21,071
	114,441	39,766
FELT CARPETS, PRESSED, NOT FILLED OR COVERED WITH ANY WOVEN FABRIC.		
Great Britain .....	Lbs. 133,094	\$ 45,373
France .....	2,218	427
Germany .....	197,056	76,739
United States .....	62,176	15,205
	394,544	137,744
WINCEYS OF ALL KINDS, N.E.S.		
Great Britain.....	Yds. 27,787	\$ 1,731
United States.....	452	32
	28,239	1,763
WOOLEN NETTING FOR LINING OF BOOTS, SHOES AND GLOVES		
Chiefly from U.S. ....		\$ 2,756
SHODDY.		
Great Britain .....	Lbs. 38,448	\$ 6,174
United States .....	16,565	509
	55,013	6,683
RAW WOOL, VIZ.: LEICES'FER, COTSWOLD, LINCOLNSHIRE, DOWN COMBING AND LUSTRE WOOLS.		
Great Britain.....	Lbs. 1,018	\$ 342
FREE GOODS.		
CHINA CLAY.		
Great Britain .....	Cwt. 67,531	\$ 25,322
Germany .....	640	2,311
United States .....	6,603	2,368
	74,774	27,981
FULLER'S EARTH.		
Great Britain.....	Cwt. 189	\$ 262
United States.....	1,903	2,851
	2,152	3,113
FURS OR SKINS, UNDRESSED, THE PRODUCE OF FISH.		
Newfoundland .....		\$ 4,712
Japan .....		221
United States .....		6,338
		11,321
WHALEBONE, UNMANUFACTURED.		
Chiefly from U. S.....	Cwt. 259	\$ 1,994

WHITING AND PARIS WHITE.		
	Cwt.	\$
Chiefly from Great Britain	91,835	25,256
SEAL OIL.		
Newfoundland .....	Gals. 144,835	\$ 57,815
VEGETABLE IVORY NUTS.		
Germany .....		4,246
United States .....		34,575
U. S. of Colombia.....		120
		38,941
SHEEP.		
Chiefly from Great Britain	No. 1,318	\$ 26,690
FUR SKINS OF ALL KINDS, NOT DRESSED, N.E.S.		
Great Britain .....		\$ 296,648
Germany .....		139,797
United States .....		342,118
Other countries .....		6,870
		785,433
HAIR, NOT CURLED OR MANUFACTURED.		
Great Britain.....	Lbs. 8,609	\$ 1,981
United States .....	201,694	30,889
Other countries .....	380	392
	210,683	33,262
HATTERS' FURS, NOT ON THE SKIN.		
Chiefly from United States .....		\$ 12,501
RAW HIDES AND UNDRESSED SKINS, DRY, SALTED OR PICKLED, AND SKINS UNDRESSED.		
Great Britain .....		\$ 93,888
B. W. Indies.....		12,951
Austria .....		14,795
France .....		87,030
Germany .....		5,958
United States .....		1,731,053
Other countries.....		2,211
		1,947,886
RAW SILK.		
Chiefly from U. S. ....	Lbs. 54,619	\$ 206,325
SILK COCOONS AND SILK WASTE.		
United States .....		\$ 1,460
WOOL, NOT FURTHER PREPARED THAN WASHED, N.E.S.		
Great Britain .....	Lbs. 3,021,673	\$ 571,869
Br. Australasia .....	1,333,519	199,740
Br. Africa .....	1,509,518	189,687
Newfoundland .....	215	53
France.....	511,845	117,493
Italy.....	12,399	2,214
United States.....	4,114,476	570,384
	10,503,645	1,651,440
MEXICAN FIBRE, ISTLE, OR TAMPICO		
Great Britain .....	Cwt. 460	\$ 2,701
United States.....	3,256	21,671
	3,716	24,372
VEGETABLE FIBRE FOR MANUFACTURING PURPOSES.		
Chiefly from U.S.....	Cwt. 4,328	\$ 21,513
HEMP, UNDRESSED.		
Great Britain .....	Cwt. 83,098	\$ 474,581
Spanish possessions .....	18,900	99,568
United States .....	96,802	575,985
	198,800	1,150,134
JUTE BUTTS AND JUTE.		
Great Britain.....	Cwt. 1,052	\$ 4,134
United States.....	4,979	5,449
	6,031	9,583

VEGETABLE FIBRE, NATURAL.		
	Cwt.	\$
United States .....	324	2,087
CANVAS FOR FLOOR CLOTH, NOT LESS THAN 45 INCHES WIDE, AND NOT PRESSED OR CALENDERED.		
Great Britain .....	Yds. 35,017	\$ 3,072
JUTE CANVAS FOR FLOOR CLOTH, NOT LESS THAN 58 INCHES WIDE.		
Great Britain.....	Yds. 360,639	\$ 29,389
COIR AND COIR YARN.		
United States.....	Lbs. 218,748	\$ 9,901
COTTON WASTE		
Great Britain.....	Lbs. 1,085,501	\$ 55,358
France .....	19,778	7,022
United States.....	3,795,477	271,282
	4,900,756	333,662
COTTON WOOL.		
Great Britain .....	Lbs. 61,526	\$ 13,307
United States .....	36,301,051	3,182,145
	36,362,577	3,201,452
COTTON YARNS NOT COARSER THAN NO. 40, FOR COVERING ELECTRIC WIRES, AND FOR USE IN MANUFACTURING LOOM HARNESS, ITALIAN CLOTHS, COTTON, WORSTED OR SILK FABRICS.		
Great Britain.....	Lbs. 371,113	\$ 62,903
United States.....	519,003	41,313
	890,921	104,216
COTTON YARNS IN COPS ONLY, MADE FROM SINGLE COTTON YARNS FINER THAN NO. 40, USED IN THE MANUFACTURE OF ITALIAN CLOTHS, CASHMERE AND COTTON CLOTHS FOR THE SALVAGES OF SUCH CLOTHS.		
Chiefly from U.S. ....	Lbs. 43,351	\$ 9,051
ANILINE DYES AND ARTIFICIAL ALIZARINE		
Great Britain.....	Lbs. 49,090	\$ 19,745
Germany .....	148,861	67,392
United States .....	245,538	121,640
Other countries.....	18,543	9,312
	462,032	218,089
DYEING OR TANNING ARTICLES IN CRUDE STATE, N.E.S.		
Great Britain.....	Lbs. 2,226,087	\$ 31,550
United States.....	1,392,000	52,089
Other countries .....	8,551	2,236
	3,627,078	88,875
EXTRACT OF LOGWOOD, FUSTIC AND OAK BARK		
Great Britain .....	Lbs. 1,372,925	\$ 55,465
France .....	18,302	1,161
United States.....	1,659,714	74,941
	3,050,941	131,567
GUMS, SUCH AS ARABIC, COPAL, SENEGAL-SHELLAC, ETC.		
Great Britain.....	Lbs. 70,975	\$ 9,990
United States.....	1,069,295	170,616
Other countries .....	5,448	1,135
	1,145,718	181,741
INDIGO.		
Great Britain .....	Lbs. 6,980	\$ 3,273
United States .....	54,290	50,243
	61,270	53,516



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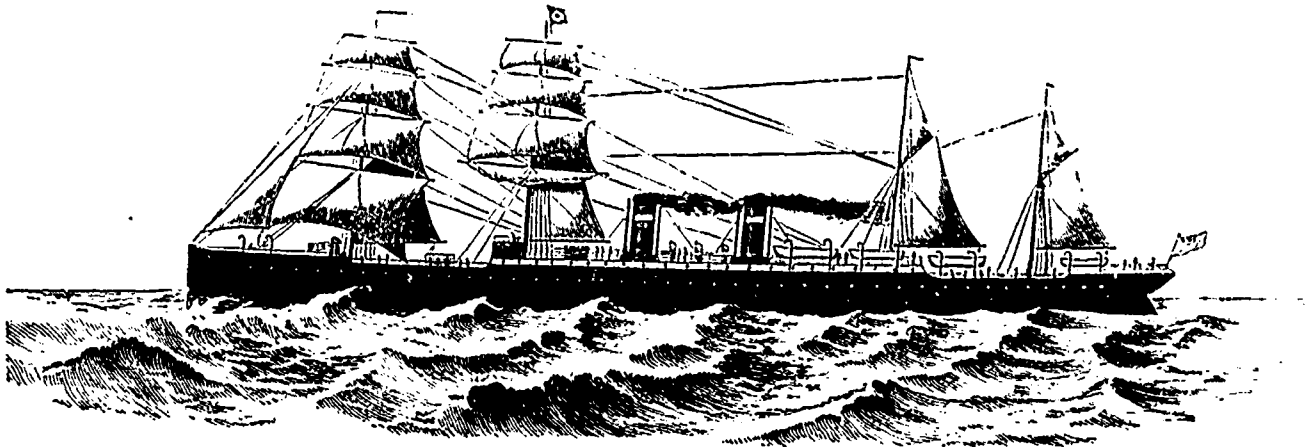
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## Liverpool Service, via Londonderry

	From Montreal	From Quebec		From Montreal	From Quebec
OREGON,	May 19	May 20	LABRADOR,	June 2	June 3
SARNIA,	" 28	" 27	TORONTO,	" 9	" 10

RATES OF PASSAGE.—Portland or Halifax to Liverpool or Londonderry: first cabin \$15 to \$20; return, \$25 to \$30, according to steamer and berth, second cabin to Liverpool, Belfast or Glasgow, \$30 and \$35; return, \$45. Steerage to Liverpool, Lond. or Londonderry, Queenstown, Belfast or Glasgow, \$24. The Steamers Labrador and Vancouver do not carry cattle. The saloons are large, airy and amidships. Ladies' rooms and smoking rooms have been placed in the most convenient positions; promenade decks are very spacious, and every attention is paid to the comfort of passengers. For further information apply to any agent of the Company, or to

**DAVID TORRANCE & CO., General Agents, 17 St. Sacrament St., MONTREAL**

### THE JUTE CROP OF 1893.

Reports from Calcutta indicate that the supply of jute this year is not likely to fall below European or American requirements. Judging by the clearances up to the end of February, and the material that will be shipped during March and April, for which freight engagements have already been made, the clearances of jute and rejections to Dundee up to 30th April will be about 1,100,000 bales, against 1,127,354 bales last year, and 1,253,645 bales during the bumper year 1890-91. As the consumption in Dundee is not likely to exceed 700,000 to 750,000 bales during the present year, and as the stock at the beginning of the year was reported to be about 200,000 bales, the stocks which manufacturers will probably hold when the new jute is available will be between 500,000 and 600,000 bales, to say nothing regarding the balance of the stocks held in Calcutta and in the interior, which will be available for shipment during May, June and July. The continental manufacturers are much in the same position as the Dundee men. The clearances up to 30th April will probably be 1,150,000 bales, against a consumption estimated at about 950,000 bales. *Capital*, after an examination of the question, estimates that by the 30th instant the total clearances to Europe will amount to 2,150,000 bales, against 2,383,000 in the previous season, showing a decrease of 230,000 bales. The shipments to America show the greatest falling off. Evidently the stocks must be large, some jute having been exported from the United States to Dundee. Up to 28th Feb. only 125,171 bales of cuttings had been exported from Calcutta, against 336,367 bales at the same time last year. Looking at this fact, the supposition would be that there must be a very large stock of cuttings held in Calcutta, but such is not the case, the explanation being that some 200,000 bales of roots, etc. have been shipped to Europe as jute. The consumers in Europe are now finding this out—to their cost. Most of the Calcutta mills hold considerable stocks, and as their consumption this year has been increased by some 250,000 bales, their extra requirements counterbalance the decrease in the quantity sent to Europe. By the time the crop of 1894 reaches Europe large stocks of jute will, it is thought, be held, decreased production, caused by the working of short time, being an important factor in connection with the situation. Exports of jute from this country have fluctuated a good deal during recent years. In 1891 the quantity was 110,000 tons. The year following the amount was only slightly

over 87,000 tons, while in 1893 the total was some 107,000 tons. The imports of jute have fluctuated in a corresponding degree—that is, during the year of large exports the imports were large; while during 1892, when the shipments from this country were smaller than in 1891 or 1893, the total takings from India were below the figures of 1891 or 1893. Last year the quantity was 278,000 tons. In 1891 the total was 344,000 tons, and in 1892, 255,000 tons of jute entered the ports of the United Kingdom.

### THE PRICE OF COTTON.

The later estimates of the American cotton crop of the past year appear to average about 7,300,000 bales. Low railway freight rates have brought the cotton down to the sea in very large volume, but some American contemporaries seem to see in the re-opening of many mills, a prospect of an early rise in prices. The *Boston Journal of Commerce* comments as follows on the situation.—“The mills of Europe are grinding out cotton at an estimated daily rate of some 26,000 bales of 400 pounds each. In this country the takings of American mills so far have been some 250,000 bales less than last season and 600,000 less than the preceding year. With the re-opening of our mills daily, and a better demand for dry goods of every character, from every section, it would seem as if we were approaching an era of activity that will raise the level of cotton. Hubbard, Price & Co. in their weekly market review, note as a curious feature of the cotton mills of the world that the course of prices seem to run in a series of years, taken together, either toward a high or low plane. Thus, the last four years have marked an era of very low prices, the preceding four years marked an era of high prices, the three years preceding that marked a series of low prices, and the three years before that period were the years in which the memorable drouths occurred, causing a high price for the planters' surplus crop. At the present time the exports of cotton from America exceed those of a year ago by a million bales. The price of cotton is nearly one and one-half cent a pound below that current then, and the supply of cotton held by mills here and in Europe is believed to be unusually small.

J. MARTIN, SONS & Co.'s fur establishment, in Montreal, was damaged by fire and water last month to the extent of about \$2,000; insured. The fire broke out on the top flat.

## DYEING OF GREYS ON WOOL.

From a broad point of view greys are simply weak blacks, and any dyestuffs that will dye black will, when used in smaller proportions, give greys. There is a great variety of tone among greys—reddish-greys, bluish-greys, greenish-greys, and so on. They may be dyed in a considerable variety of ways and from a large number of dyestuffs, both natural and artificial. Of these two classes the latter gives the best result as far as regards brightness of tone, and, as regards other properties, the greys obtained from the artificial coal-tar colors are fully equal to those from the natural dyes. A large number of recipes are in use by dyers for the production of greys, which, having in view the keeping of these articles within reasonable bounds, makes it almost an impossibility to do more than give a mere fraction of them here. However, a number of representative recipes will be given, covering all classes of dyestuffs capable of being used for the purpose, and thus forming guides to methods of dyeing and the proportion of dyestuffs to be used.

**Light-grey on Wool.**—Dye at the boil for  $\frac{3}{4}$  hour in a bath containing 1 lb perchloride of tin, 3 lb alum, 3 oz. indigo extract, and 2 oz cochineal.

**Slate-grey.**—Mordant by boiling with 4 lb. alum and 1 lb. argol, then dye with 6 lb. logwood, 6 oz. cudbear, and 3 oz. indigo extract.

**Slate-grey.**—Another method is to boil the wool with 10 lb. logwood, 2 lb. Glauber's salt, and 1 lb. sulphuric acid for  $\frac{3}{4}$  hour; then lift, add 1 lb. copperas, and re-enter the wool, working at the boil for  $\frac{3}{4}$  hour; then lift, wash, and dry.

**Reddish-grey.**—Boil for an hour with 10 lb. fustic, 11 lb. cutch,  $\frac{1}{2}$  lb. bichromate of potash, and  $1\frac{1}{2}$  lb. copperas.

**Pearl grey.**—Give a light-blue ground in the indigo vat, then dye in a new bath with 2 lb. muriate of tin and  $\frac{3}{4}$  lb. cochineal, working at the boil to shade.

**Silver-grey.**—Prepare a bath with  $\frac{3}{4}$  lb. tannic acid, work for an hour in a warm bath, then sadden with 3 lb. nitrate of iron to shade; then lift, wash, and dry.

**Pearl-grey.**—Prepare a bath with 3 lb. fluoride of chrome and 4 lb. alizarine Bordeaux B, enter into the bath when cold, then heat to the boil, and work for 1 hour; then lift, wash, and dry.

**Silver-grey.**—The dyebath is made with 3 lb. fluoride of chrome and  $6\frac{1}{2}$  oz. alizarine cyanine GG, the dyeing being done as in the last recipe.

**Greenish grey.**—A good shade is dyed with 3 lb. fluoride of chrome, 4 oz. alizarine Bordeaux B, and 4 oz. diamond flavine G, working as given in pearl grey.

**Grey.**—Give a pale-blue bottom with an indigo vat, then dye in a bath containing 1 lb. fluoride of chrome,  $\frac{1}{2}$  oz. diamine fast red F, and  $\frac{3}{4}$  oz. anthracene yellow C; work at the boil for 1 hour; then lift, wash and dry.

**Dark-grey.**—A very fine dark-grey, almost approaching a black, is obtained by the following plan.—Bottom the wool with a medium blue by means of the indigo vat; dye in a bath containing 1 lb. fluoride of chrome, 4 oz. diamine fast red F, and 3 oz. anthracene yellow C.

**Slate-grey.**—A good slate-grey, of a slightly greenish tone, can be dyed in a bath of 5 lb. acetate of ammonia,  $\frac{3}{4}$  lb. acid blue 4S, and  $\frac{1}{2}$  lb. titan brown R, working at the boil to shade.

**Pale Slate-grey.**—The dyeing is done in a bath made with 5 lb. acetate of ammonia, 5 oz. acid blue 4S, and  $1\frac{1}{2}$  oz. titan brown R, working at the boil for 1 hour.

**Silver-grey.**—A very nice shade is dyed with 3 oz. acid blue 4S,  $\frac{1}{2}$  oz. titan red, and 5 oz. acetate of ammonia.

**Silver-grey.**—A shade similar to the last is dyed in a bath containing 10 lb. Glauber's salt, 5 lb. bisulphate of soda, and  $\frac{3}{4}$  oz. anthracite black B. By adding a little thiocarmine or acid blue 4S, the shade can be turned bluer in tone, while the addition of a little milling yellow O or titan yellow Y turns it to the green side.

**Pearl-grey.**—Make the dyebath with 10 lb. Glauber's salt, 5 lb. acetic acid, and  $\frac{3}{4}$  lb. naphthylamine black D. This gives fine shades of pearl-grey.—*Textile Mercury.*

## CHEMICALS AND DYESTUFFS.

Orders are coming in more freely for goods arriving. The mill trade, however, is dull, many concerns being closed down.

The following are present quotations:—

Bleaching powder.....	\$ 2 50	to \$ 2 75
Bicarb soda . . . . .	2 25	" 2 35
Sal soda . . . . .	0 75	" 0 80
Carbolic acid, 1 lb bottles . . . . .	0 25	" 0 30
Caustic soda, 60° . . . . .	2 30	" 2 50
Caustic soda, 70° . . . . .	2 60	" 2 75
Chlorate of potash.....	0 20	" 0 22
Alum . . . . .	1 40	" 1 50
Copperas . . . . .	0 80	" 0 90
Sulphur flour . . . . .	1 75	" 2 00
Sulphur roll . . . . .	2 00	" 2 10
Sulphate of copper . . . . .	4 00	" 5 00
White sugar of lead . . . . .	0 07½	" 0 08½
Bich potash . . . . .	0 10	" 0 12
Sumac, Sicily, per ton . . . . .	75 00	" 80 00
Soda ash, 48° to 58° . . . . .	1 25	" 1 50
Chip logwood . . . . .	2 00	" 2 10
Castor oil . . . . .	0 06½	" 0 07
Cocoanut oil . . . . .	0 06½	" 0 07

## RAW FUR MARKET REPORT.

Montreal, May 10th, 1894.

The fur sales are over and practically nothing is doing in the trade. We repeat quotations as follows:—

Beaver, spring, per lb. . . . .	\$4 00	to \$4 50
Bear, large size, choice, per skin . . . . .	20 00	" .. ..
" med. size, per skin . . . . .	14 00	" .. ..
" small size, " . . . . .	8 00	" .. ..
Otter, spring caught " . . . . .	.. ..	" 8 00
" winter caught " . . . . .	.. ..	" 13 00
Marten, " . . . . .	0 80	" 1 00
Mink, dark, " . . . . .	1 00	" 1 50
" spring " . . . . .	0 50	" 0 60
Fisher " . . . . .	4 00	" 6 00
Lynx, " . . . . .	2 00	" 2 50
Muskrat, spring trapped, per skin . . . . .	0 18	" .. ..
" winter " . . . . .	0 12	" 0 10
" fall " . . . . .	0 07	" 0 10
" kits " . . . . .	0 02	" 0 05
Fox, red . . . . .	1 25	" 1 40
Raccoon, " . . . . .	0 25	" 0 75
Skunk, " . . . . .	0 25	" 0 90

**WANTED**—By a Maritime Province mill—a piece sewer and mender. None but a first-class hand need apply. Good wages will be paid. Address Box 7, JOURNAL OF FABRICS, Fraser Building, Montreal.

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ANILINE COLORS OF EVERY KIND

SPECIALTIES:

**Fast Colors for Wool** Such as DRY ALIZARINE, ALIZARINE BLUE, GREEN, YELLOW, etc.

Also CAUSTIC POTASH FOR WOOL SCOURING

WRIGHT & DALLYN, Agents - - HAMILTON, Ont.

**A SCRAP OF CARPET HISTORY.**

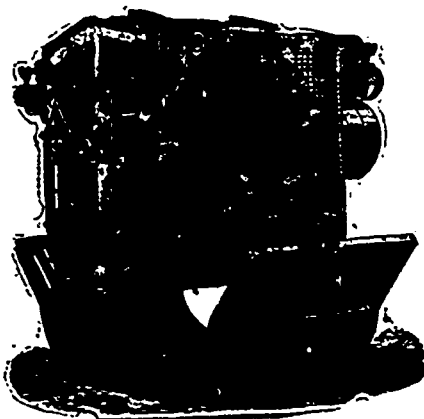
In 1735 English Axminsters were first made. But it was not until 1749 that a loom was constructed that would produce a Brussels carpet, and here, says the *Cotton Factory Times*, is an exceedingly interesting anecdote, which has been handed down from father to son as an inviolable truth: During 1730 and 1735 John Broom travelled through Tournay and Brussels studying the stitch which was then known as the Brussels stitch. In Brussels, particularly, weavers were at the time making a carpet named after the town—the Brussels carpet. Broom studied with much earnestness the mystery of the manufacture, and finally made the acquaintance in Tournay of a weaver understanding the secret. He and this weaver immediately repaired to England, and near Mount Skipet, Kidderminster, they put up the first Brussels loom, in 1749. They operated in absolute secrecy, but in time their *modus operandi* was exposed. Broom and his Belgian workman labored night and day, and, it being well known where their operations were conducted, some enterprising fellow climbed to the window, and, night after night, from his perilous perch outside, he studied the operations of the mechanism within, until he was able to carry away in his mind a model of the Brussels loom. Then a second firm and several others soon came into the field, and in 1753 Kidderminster was doing considerable trade in the way of Brussels. To-day there is hardly anything else but Brussels made at Kidderminster.

**NEW-METHYLENE-BLUES.**

W. J. Matheson & Co., Ltd., dye-stuff manufacturers, of New York, in a recent bulletin giving samples of their New-Methylene-Blues, say: "For dyeing purposes our New-Methylene-Blues are equal with regard to fastness to the older marks of this class of dye-stuffs, but have the advantage over the latter to produce finer, purer shades, to be of greater tinctorial power, and to be lower in price. For printing purposes the New-Methylene-Blues are distinguished by their resisting steaming well, that the printing paste keeps very well, and that they are better suitable for resists than any competing dye-stuff, which latter advantage has specially been pointed out to us by printworks where our New-Methylene-Blues are in regular use. The fastness against washing and acids of prints done with our New-Methylene-Blues is excellent and not surpassed by any product of the Methylene-Blue series."

This firm have a Canadian office and laboratory at 425 St. Paul street, Montreal.

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**HESPELER, ONT.**



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OF  
**Woolen  
Machinery,**

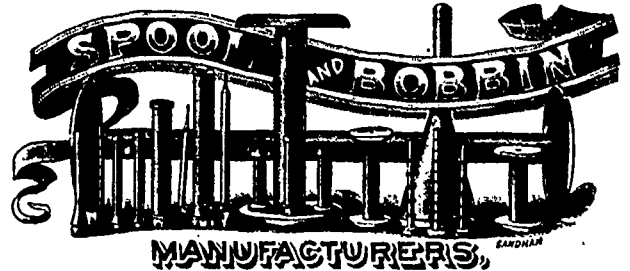
Fulling Mills,  
Cloth Washers, Wool  
and Waste - Dusters,  
Drum Spool Winders,  
Reels, Spooling and  
Doubling - Machines,  
Ring - Twisters, Card  
Creels, Rag - Dusters,  
Dead Spindle Spooler  
(For Warp or Dresser  
Spools), Pat. Double-  
Acting Gigs, etc., etc.

THOMAS KER

J. HARCOURT

**KER & HARCOURT,**

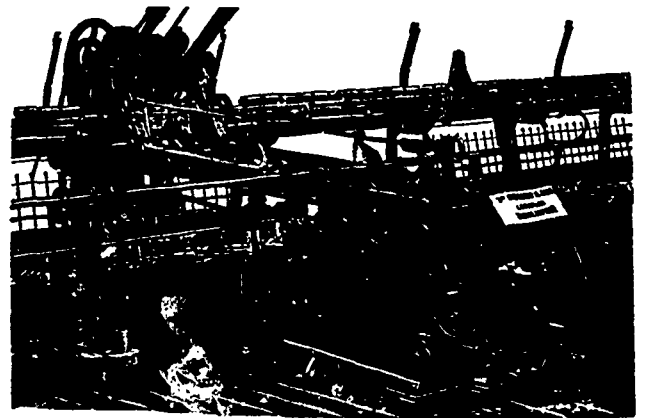
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Walkerton, Ont.

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Drying Machines, Patent Wool and Cotton Dryer, Patent Wool  
Scouring Machine, Cross Raising Machine, Patent Crabbling and  
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Income . . . . . \$1,134,867.61

Life Assurance  
in force . . . \$23,901,046.64



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**DOMESTIC AND FOREIGN WOOLS,**  
Sumac, Japonica, &c.

**THE SMITH WOOLSTOCK CO.**

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and Upholstering Flocks

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NON-SHRINKABLE UNDERVESTS

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Sample and Stock Rooms:

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KINGSTON, Ontario

Manufacturers of

The Celebrated **ESTY HOSIERY**  
The Celebrated **HENNOR SOCKS**  
Overshirts, Shirts and Drawers

Selling Agents: { JOHN S. SHEARER & Co., Montreal  
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**YARMOUTH WOOLEN MILL CO., Ltd.**

Manufacturers of

Fine Woolen Tweeds, Honespuns, etc.  
**YARMOUTH, Nova Scotia**

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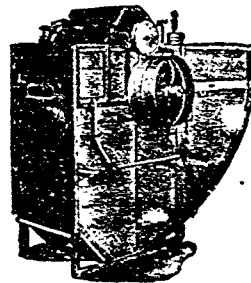
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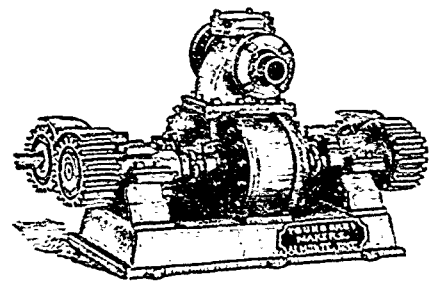
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Manufacturers of English or American Fulling Mills and Washers, Wool Pickers Exhaust Fan Driers, Dusters, Rotary Force Pumps for Fire Duty, Boiler Feed Pumps, Shafting, Hangers, Castings, Pulleys, Gearing, Forgings.

Full equipment of mills of every kind.

YOUNG BROS., Almonte, Ont.

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PAPER COP TUBES FOR MULE SPINNING.  
LARGE PAPER TUBES FOR USE ON BOBBINS.  
FULL LENGTH TAPERED TUBES.

PAPER TUBES SILK MANUFACTURERS'  
PAPER CONES & TUBES FOR CONE WINDERS.

LOWELL, MASS.

## Among the Mills

J. E. Mollere's straw hat factory, at St. John's, Que., is very busy just now.

Work is about to begin on the projected extensions to the Almonte knitting mills.

Additional machinery is being put in at the C. Turnbull Knitting Co.'s mills at Galt, Ont.

The wool mat factory of P. Goudron & Co., Vancouver, was destroyed by fire last month.

Brown & Wigle have put a new napping machine into their woolen mill at Kingsville, Ont.

Dyson & Webb have joined in partnership at Smith's Mills, Que., as manufacturers of woolen goods.

George Guay has opened a shirt factory in St. Romuald, Que., which employs at present some forty hands.

The Trent Valley woolen mills, Campbellford, Ont., have been undergoing repairs, but have now resumed work.

Mr. Fazakely, of Montreal, goes to take charge of the weaving department at the Maginnis mill, New Orleans, La.

The Oxford, N.S., Wool Mfg. Co. contemplate erecting an iron building, 30 x 50 ft., to contain the pickers, custom cards and other machinery.

The Queen City Underwear Co. of Buffalo, manufacturers of muslin underwear, think of establishing a branch factory in Canada, possibly at Windsor, Ont.

Should the scheme for establishing floating docks at Moncton, N.B., in connection with the I.C.R., be carried out, it is proposed to erect a jute mill there.

The Cornwall Manufacturing Co.'s woolen mill, and Hodge's woolen mill, at Cornwall, resumed work a few days ago, when the water was let into the canal.

A factory is likely to be established at St. Stephen, N.B., for the manufacture of shirts, drawers, hosiery, &c., by means of a newly invented knitting machine.

The proprietors of the Merriton, Ont., woolen mills seized the opportunity offered by the absence of water from the canal to thoroughly overhaul and repair them.

The West End woolen mill at Strathroy, James Butler proprietor, reports a busy season. Flannels, blankets and underwear are the principal articles of manufacture.

Attention is called to the announcement elsewhere of the removal of the works of R. W. King & Co., the well-known engineers and machinists, from Montreal to Toronto.

Sydney Sykes now travels for the Guelph Woolen Mills Co. His territory includes the Maritime Provinces. He will continue to represent the Armstrong Carpet Co., with whom he has been for a number of years.

At the annual meeting of the Globe Woolen Mills Co., held in Montreal last month, the following directorate was appointed: A. F. Gault, Hugh McLennan, Andrew Allan, Sir Donald A. Smith and R. R. Stevenson.

Mr. Brick, superintendent of the Kingston, Ont., knitting mill, is manufacturing a new machine for making men's socks. Mr. Hewton, the manager, is in the old country trying to sell the rights for manufacture in England.

The Waterloo, Que., Knitting Co. has gone into voluntary liquidation. Liabilities, about \$20,000, and nominal assets considerably larger. The factory will run as usual until the property is sold. The Waterloo corporation has a lien for \$8,000 on the site and machinery. The chief stockholders in the company were A. M. Cruickshank, A. F. Savaria, J. H. Lefebvre, C. A. Nutting and W. R. Lefebvre.

The Consumers' Cordage Company's twine factory at Port Hope re-opened during the last week of April.

A new flume is being put into the Harrison woolen mill at Owen Sound. New looms and other machinery are also being added.

P. McGinnis, of the firm of Montgomery & Co., and the Victoria Hosiery Co., St. John's, Que., has assigned. Meeting of creditors is held this month.

Mr. Quinn, the Toronto men's furnisher, has leased and refitted the factory formerly occupied by the Heintzman Co., and will manufacture shirts and neckwear.

John Connor, manager of the binder twine factory at the Kingston penitentiary, says the factory is now running. When the works get into proper order about forty men will be employed.

The Hawthorne woolen mill is running again with part of the staff. It is expected that the full mill will be running in a few days. The Gillies mill is expected to start next week.—*Carleton Place Herald*.

The machinery for the new carpet factory being established in St. Catharines, Ont., has now been removed from Woodstock, and put in place. Several of the employees of the old factory have changed their abodes.

The time of employment at the Canadian Cotton Co.'s mills at Hamilton has been reduced from 60 to 35 hours per week. Some of the employees objected to the reduction of wages which ensued and left to seek employment elsewhere.

The Northwestern Cordage Company of St. Paul, Minn., are considering the erection of a mill for the manufacture of binding twine and rope at Winnipeg at a cost of about \$50,000. They ask Winnipeg council to offer inducements.

McArthur, Corneille & Co., Montreal, importers and manufacturers of oils, chemicals and dyestuffs, and sole agents for two or three European and American dyestuffs firms, are very busy just now. They are preparing to issue a new catalogue.

The Ontario cotton mill, Hamilton, had a narrow escape from falling a prey to the flames a few weeks ago, the fence adjoining the dyehouse being destroyed. After some trouble, however, the fire was extinguished without any serious damage having been done.

The report of a strike in the Hamilton mills of the Canadian Colored Cotton Co. proved to be incorrect. The rumor arose from the fact that the time had been reduced from 60 to 35 hours per week and that some of the hands in consequence left for the States thinking to get employment at full time.

A few days ago Mr. Bennett Rosamond, M.P., of Almonte, received a letter from "a poor girl," enclosing a sum of money of which she defrauded the Rosamond Woolen Company. While admiring her spirit, Mr. Rosamond thinks she is quite mistaken, even taking her own version, and is anxious to restore her the money.

Owing to a reduction of wages in the carding room of the Courtenay Bay cotton mill of Wm Parks & Son (Ltd), a strike took place which caused the mill to be shut down, throwing 200 hands out of work. During the interregnum, and while the machinery of the mill was being overhauled, Mr. Parks, the general manager, issued the following circular to the hands: "My Friends, I am sorry that some of you have been so foolish as to strike because of a small reduction in wages. I am most anxious to do the best I can for you, but I am now selling goods so low that I cannot afford to pay the wages I have been paying. Our grey cottons are now sold to the wholesale trade at lower prices than they are sold for equal quality in England. The mill will be ready to start on Monday, 7th May. I will have a scale of wages made out which will enable me to make both ends meet. If you are willing to accept it I will start the mill and work full time right along. If you are not willing to accept what I can afford to pay, the mill must remain idle." It is understood that the strikers have conceded the reasonableness of Mr. Parks' position, and are now preparing to return to work.

A. H. McKee, for a number of years manager of the dye stuffs department with Middleton & Meredith, has severed his connection with that firm to accept the agency for the Dominion for the Oakes Manufacturing Co. of New York, one of the leading American manufacturers of all descriptions of dye stuffs and chemicals. The many friends of Mr McKee among the woolen and cotton mills throughout Canada, will be pleased to hear of his promotion. His office is in the Board of Trade Building, Montreal.

Peruvian cotton is being very successfully used as a mixing cotton in merino hosiery and other knitted goods. Alfred Boyd, No. 1 Wellington st., Toronto, has been appointed Canadian agent for one of the largest firms dealing in Peruvian cottons, and is prepared to ship direct to spinners in any part of Canada. These cottons are made up in handy bales of 180 lbs., as brought down from the interior of Peru by mule train, and the samples Mr. Boyd is now showing to the trade are very fine. Mr. Boyd also deals in borax and fuller's earth for textile manufacturers.

### MACCLESFIELD SILK TRADE.

The staple industry of Macclesfield was perhaps never in a worse condition than at the present time. Manufacturers, says the *Textile Manufacturer*, have been almost at their wits' end as to what means to adopt to keep their places of business going. The silk weavers, as a class, do not often complain, but the fact could not be lost sight of that very great poverty and suffering has existed. The causes which have been at work to bring about the general depression in the silk industry are various. On the one hand, it is asserted that the bi-metallic question has been a great factor therein, the price of silver during February having fallen to a price yet unprecedented in human history. A turn in the tide, however, came, and manufacturers are hopeful that with a steady increase of price more confidence may be felt, and an impetus may be given to the silk industry.

The outlook at present, however, is not at all reassuring, and the trade horizon shows little, if any, signs of an improvement in the more immediate future. To be sure, there has of late been a run on scarves in the London warehouses, but this has been of little value to the Macclesfield trade, for instead of there being a demand for this class of goods from the manufacturers, the London warehouses and middlemen have been content to lay hold of any odd pieces of silk, and cutting them up to the width of Windsor scarves, have trimmed and hemmed the edges, and, cutting the ends in a vandyked form, have filled them in with lace. Several manufacturers are introducing some new features in the way of scarves in order to counteract this innovation.

The large failures which have recently taken place of several London and Glasgow firms have told heavily on several Macclesfield manufacturers, some of whom have suffered heavy losses thereby.

The forthcoming silk exhibition at Stafford House, London, does not appear to find favor with a number of Macclesfield manufacturers—in fact, at the annual meeting of the local Chamber of Commerce, recently held, one manufacturer called the last silk exhibition a "fiasco," which produced a sharp retort from Mr. Thomas Wardle, the president of the Silk Association of Great Britain and Ireland, who declared that exhibitions in the past had given considerable impetus to the silk trade. It is the intention, however, of several manufacturers to have a number of cases of silk goods on exhibition at Stafford House.

It must be gratifying to silk manufacturers generally to learn that the hon. member for the Macclesfield Division (Mr. W. Bromley-Davenport), who has always taken the most lively interest in the silk trade, has, in accordance with the promise he made during the Parliamentary contest in 1892, and which he has often repeated since, expressed his intention about the middle of April to introduce a motion into the House of Commons for the purpose of ameliorating to some extent the depressed condition of the silk trade. The motion is as follows. "That this House, having regard to the lamentable decline of the silk trade in this country, and the distress caused thereby, is of opinion that a moderate duty, affecting only

an article of luxury, should be imposed upon all imported manufactured silks." The result of this motion will be awaited with concern by all interested in the silk trade, both employers and employed.

### ENGLISH CARPET MANUFACTURERS.

The *Teutonic*, which sailed from Liverpool April 18th, conveyed quite a galaxy of carpet talent to America. There were no less than seven carpet travellers on board the liner, including, amongst others, Messrs. Miller (Cook, Sons & Co., Liversedge and London), C. Lowe (James Humphries & Sons, Kidderminster), Bernard Eck (T. B. Worth & Son, Stourport), Lawrence (Henderson & Co.), and Henry Beutell (of John Crossley & Sons, Limited, Halifax). The query suggests itself: How are the employers of these commercial ambassadors going to pay expenses? There are at least ten British firms having connections in the United States market. During the March quarter our sales amounted in quantity to 71,900 yards, valued at £9,510, or say £950 for each house—an average of, say, £316 a week. The weekly average for March was even smaller than this, and when it is remembered that profits are cut down to a low level by the competition of Americans like the Bigelows, Dobsons, Brombys, Smiths, and others, the mechanical equipment of whose mills is certainly up to the standard of modern requirements, it will be admitted that the United States market can offer little inducement to European firms.

As it happens, travellers can cover the Canadian ground on their western tour without much extra expense. New York, Philadelphia, and Chicago can be visited, for the purpose of covering the chief wholesale centres, and from any of these points a capital train service to Montreal, Toronto, or Quebec is obtainable.

In Great Britain many of the large carpet houses sell direct to retailers. In the United States they sell as a rule to the wholesale. The reason is not difficult to find. It would not pay English firms to employ travellers to scour a territory having an area of over three million square miles for the purpose of selling a paltry two hundred thousand pounds' worth of goods per annum; and even sales of this magnitude are looked upon as indicative of an exceptionally good year.

Canada, with its small population of five millions, is actually the largest foreign buyer of carpets we possess. During the March quarter our exports amounted in value to over £89,000. To illustrate the importance of the Canadian market in a more forcible manner, we may state that during the March quarter we shipped to the five millions of people inhabiting the Dominion nearly £10,000 more goods than to the 160 millions of people inhabiting Germany, Holland, Belgium, France, Spain, and the United States combined. —*Textile Mercury*.

### IN THE CARPET BAZAAR OF CAIRO.

Lost, in every sense of the word, geographically as well as imaginatively, you wander on amid the restless flowing stream of swarthy, turbaned faces, and lithe, white-and-blue robed figures, your ears filled with the strange cries, and your senses intoxicated with the heavy, nameless odors of the East. Farther and farther you ramble, and deeper and deeper plunge into this magic labyrinth of winding ways. The alleys seem to narrow more and more every minute, until the rich brown, profusely carved woodwork of the jutting gables on either side of the roadway almost threatens to meet and blot out the strip of burning blue above your head. As the street straightens the crowd appears to thicken, until at the moment when the one is at its narrowest, and the other at its densest, you step into a little square in which the blaze of color and the play of movement reach their height. You are in the carpet bazaar of Cairo—the spot at which the many colored throng around you finds its most gorgeous background. Carpets of every hue and web—Tunisian, Algerian, Smyrniote, Persian—drape the whole quadrangle with an arras worthy of a Sultan's seraglio.—*London Correspondent*.



**LACTIC ACID.**

Lactic acid has been known for many years as a valuable agent in the mordanting of textile fabrics—one that may be used in place of tartaric acid and the tartars. The difficulties that have prevented its use have been, chiefly, its cost, which was much too high, and, partly, nuisances that arise during its manufacture. The rise in the price of tartar and tartaric acid, due to the spread of diseases of the grape, and the increased use of these acids in the preparation of baking powders and in bread, together with improved and decreased cost of making lactic acid, have, however, resulted in making the latter cheaper.

Lactic acid, if used in the right quantities, effects a saving in the bichromate of potash used in mordanting—at least with most dyestuffs—and often a large saving. The reason of this is that tartaric acid and the tartars retain in the dyeing liquors no small proportion of the chromium present in the form of an acid salt; while lactic acid retains little, if any, of the chromium. Like the tartars, with reasonable care in handling, the mordant is set evenly upon the fibre, and it is not released suddenly from the chromic acid, but somewhat slowly. When the quantity of bichromate of potash is reduced to produce a given shade, the quantity of lactic acid may also be reduced.

There is also with most dyestuffs, particularly with the alizarines, a saving of a considerable portion of the dyestuff to obtain an equal depth of shade; for the chromium hydroxide on the wool is left in a slightly different state from its condition when tartar is used, and attracts the coloring matter more fully from the dyebath, leaving less, therefore, to run into the drains and sumps. All tests with lactic acid so far made show equal fastness and superior brilliancy of shade over those obtained when tartar is used. A saving may therefore be effected in the quantity of mordant used, in the quantity of assistant acid used, and in the quantity of dyestuff required. Lactic acid can now be obtained commercially.

**RECENT CANADIAN PATENTS.**

J. H. Nicholls, Fletcher Barton, and Isaac L. Barton, of Daventry, Wash., have patented a carpet stretcher and tacker. In connection with the guide stay there is a driver having a recess in its under side to receive a tack head, and carrying guides leading from the guideway. *The driver is encircled by a coiled spring.*

Harry Moore, Wellingborough, Northants, England, has patented a sewing machine, having a continuously rotated shuttle, a central pin extending from the back of the shuttle, a bobbin protection provided with a tension device, and adapted to support and protect the front side of the bobbin, and to fit on the central pin. Means are provided for retaining the bobbin protector stationary on the pin. Mechanism for varying the feed of the feed plate or ring is provided in the shape of a counter-shaft adapted to operate the feed mechanism, a pivoted lever vibrated from the main shaft, a link connected at one end to the counter-shaft and connected at the other end by a sliding joint to the vibrating lever, and a sleeve through which the link is free to slide and which is adapted to be operated to move the sliding end of the link nearer to or further from the fulcrum of the lever.

August Clauss, Hohenstein, Saxony, has patented a method of making knitted riding breeches, hose and similar articles, by arranging the two leg-pieces separately on the needles of a knitting frame, then stitching the edges of the parts so formed, and thus completing the article, the insides of the leg portions, and the seat and back being suitably strengthened and having no seams.

James & Richard Lister, of Aireworth Mills, Yorkshire, England, have patented a method of preparing warps for looms, consisting in conducting the partly divided warp threads to the roller, and passing the threads through mails in the reciprocating healds and through a reed to a rotating beam.

V. Lacasse, Chemnitz, Saxony, has patented an apparatus for punching jacquard cards, consisting of a conducting plate on which the design is produced in insulating material, a series of conducting styles and electro-magnets, armatures and lifting wires operated by

the electro-magnets, horizontal needles and a reciprocating perforated plate. The horizontal needles are selectively lifted by electro-magnets, each having a hook or projection for the purpose of moving the lifting wires out of contact with the lifting rails, such of the needles as are not lifted remaining stationary, while those which are lifted are pushed backward against the lifting wires.

William E. Elliott, Grand Rapids, Mich., has patented a button-fastening machine with automatic feeding mechanism adapted to feed wire through the eye of the button from continuous wire, a staple mechanism adapted to sever a section of the wire to form a staple, a staple-bending mechanism, means for clinching a staple and button to the fabric by a single stroke of the button-setting mechanism. There is an anvil to receive the staple-cutting bar with a yielding pressure, and there is an automatic adjustable button feed finger adapted to receive the button from the race-way, which delivers them to the finger singly. Connected with a reciprocating slide, there are a cam, a lever having a pivot intermediate its ends, a pin with which the cam surface engages in giving the backward stroke to the lever, a wire grip at the outer end of the lever, a locking lever turning on a pivot, a stop on one end of the lever, and a button feed finger adapted to engage with the stops on the locking lever, and to cut out the wire feed when no button is fed to receive the wire. A cutter is provided over which the wire is bent, and having a groove or the reception of the button eye.

Kikelman Brothers, Ridgeville, Ind., have patented a wire fabric machine of which the upright frame piece has a series of regularly spaced openings, stationary elongated warp wire tubes fitted at one end; in these openings a vertically aligned series of intergearing wheels loosely journaled on the stationary tubes and having parallel face grooves, shiftable spool carriers, having tongues registering with the grooves in the above-mentioned wheels, and shifting devices for sliding the spool carriers from one wheel to the other.

Joseph F. Platt, Waterbury, Conn., has patented a detachable or bachelor button, having the back or socket plate secured to and depending from the face or cap-plate. The entire bottom of the socket-plate is concaved or struck up, and transversely slotted, and has kerfs or slots extending from the lower edge, to, or nearly to the upper edge, in which there are a central circular opening and a shank having a head or heads adapted to engage the shells. An eyelet is adapted to be inserted and secured within the bottom of the depending cup of the socket-plate, and it carries points which enter the cloth and distribute the strain and hold the button firmly in place.

Augustin Avriel, Paris, France, has patented a sewing machine in which the driving shaft is actuated by means of a rack or toothed bar worked in the one direction by hand, foot or otherwise, and moved in the other direction by the expansion of a spring or elastic body which is compressed by the previous part of the motion of the rack.

E. L. McDevitt, Belvidere, Ill., has patented a carpet stretcher and tacker having a standard, a plunger secured to it, a socket at the lower end of the standard, a rack for holding the tacks, a spring for moving the rack in one direction, and a mechanism (operated by the plunger) for moving it in the opposite direction.

George Henry Wilson, Toronto, Ont., has taken out a trademark for boating serges.

John Taylor, Toronto, Ont., has taken out a trademark for chemicals, dyestuffs, and aniline colors.

ATTENTION is called to the card of M. D. Barr & Co., electricians and dealers in electrical supplies. Mr. Barr took hold of the business of the Edison Company (now the Canadian General Electric Co), when its operations amounted to a few thousands yearly, and when he left it the business amounted to a million a year. Mr. Barr has associated with him his brother, F. A. Barr, also for years with the Edison Co. as practical electrician, and their well known industry, enterprise and knowledge of the business will, we trust, assure them the success they deserve. The new firm have been already appointed agents for several leading electrical firms of the United States.



W. T. SAMUEL & Co., hatters and furriers, Montreal, have assigned. Liabilities \$65,000.

D. B. PHILLIPS, dry goods merchant, Woodstock, Ont., has assigned. Liabilities over \$20,000.

YARN, or wool cloths, may be made unshrinkable by saturating with alum solution and steaming when stretched.

A HANDSOME five-story building has been erected in Winnipeg for John W. Peck & Co., dry goods merchants.

THE Canadian Needle Co. have started a factory in Montreal for the manufacture of needles, pins, hooks and eyes, etc.

HUGHES, LEVI & Co., Toronto, manufacturers of caps, have dissolved partnership. Paul Levi retires, and the business will be carried on as before.

THE Toronto Upholsterers' Co. has been incorporated. Incorporators, J. A. Clark, Christine Dupre, Sarah Clark, Wm. Cornwall and Noble Burns.

MARTIN, SONS & Co. have purchased the whole assets of the late well-known fur firm of John Martin & Co., Montreal, and are carrying on business in the old establishment.

CONTRACTS for next year's clothing for the Montreal police force have been awarded as follows. R. Charlebois, officers' coats, \$30; men's coats, \$18; men's pants, \$5.25. G. H. Pearson, officers' pants, \$6.50. J. B. Lanctot, gloves, \$16.50 per doz. Boisseau Freres mitts, \$10.50 per doz.

CHAS. K. GRAHAM, of Belleville, has just returned from Jamaica. He states that there are good opportunities for developing Canadian trade with that island, and while he was there he succeeded in obtaining several orders for woolen goods. He also disposed of several samples of silk from Canadian looms.

ASKLEPIAS, a textile plant of American origin, has been for some time under cultivation in Senegambia, and there seems good reason to believe it can be grown in Europe, experiments made in France and Germany, and especially in Alsace, having yielded favorable results. The fibrous material obtained from this plant is uncommonly fine, and has a gloss like silk.

IN the Italian silk spinning industry more than 100,000 persons (chiefly women) are engaged. France gives employment to 410,000 persons in silk spinning, Germany to between 30,000 and 40,000 and the United States to over 50,000. In England the number is given at 42,995 in 1885—which contrasts not very favorably with the state of the English silk trade a century ago, when 300,000 were engaged.

To produce a black on 20 kilos. (44 lb.) of carpet yarn, prepare a bath, to which add 5 kilos. (11 lb.) alizarin black W R paste through a fine sieve; stir well, heat to boil, then cool off, and enter the well-scoured and rinsed yarn, and boil for one hour, while handling well. Then take out the yarn and add to the bath the clear solution of 2 kilos. (4 lb. 6½ oz.) alum, 200 grms. (7 oz.) sulphate of copper, and 100 grms. oxalic acid, stir well, re-enter the yarn, and continue boiling for 1½ hours. The yarn is then taken out, rinsed thoroughly, and dried. This a German recipe.

As is known, the old method of spinning jute in the hackled condition has been superseded by the use of carded or combed jute, and the best qualities of warp and weft yarns are now spun from carded jute. Recently, successful experiments have been made with spinning flax combings and short card-waste, and it is stated that the yarns being smooth, even, and clear like cotton yarns of lower counts, have found a ready market as tow yarns. There seems, therefore, no longer any good reason why many thousand tons of flax straw should annually be burned or allowed to rot unused.

THE business of the Yarmouth Hosiery Manfg. Co., of Yarmouth, N.S., is now offered for sale, and the opportunity is a good one for an investor of experience in the trade. The managing partner, and the only one of experience in the business, died last year, and in consequence the mill has been temporarily closed. The present partner will therefore sell the business and plant. Our readers will remember that this mill had made an excellent reputation in the manufacture of underwear and hosiery, and added a considerable amount of first-class machinery which is still as good as new. The engine is a 10-horse power one, and the mill is the only one of its class in the Maritime Provinces. Full particulars will be given on application to the company.

A FIRE broke out last month in the premises of the Imperial Waterproof Paper Co., Montreal, totally destroying the interior. Loss, \$6,000; insured. The company have taken temporary offices in St. Francois Xavier Street. Hugman & Sons, window shade manufacturers, who occupied the same building as the Imperial Waterproof Paper Co., were also burned out. Not insured.

AMERICAN tailors are angry because of the practice which has arisen recently in this country of merchant tailors sending travelers across the United States border to take the measures of customers, and then making the garments in Canada. When the clothes are completed, the owners come to Canada and either wear them or take them back as personal effects free of duty. The Americans are making efforts to stop the practice.

NOTWITHSTANDING the cry of dull times, Willis & Co., dealers in pianos and organs, report a good trade during the past year. Mr. Willis, head of this well-known firm, is perhaps the most successful piano dealer in Canada, his trade having steadily increased year by year since he opened business in Montreal. His success is not to be wondered at, for Mr. Willis is not only an excellent judge of an instrument, which enables him to make a good choice of a maker to represent, but he is a man invariably courteous and pleasant to deal with. These qualities have contributed to bring Mr. Willis a large and growing trade in the city, and have given him also a wide range of custom from country places throughout Quebec and Eastern Ontario.

THE special report of E. H. Osborne, British inspector of factories, "on factory conditions of work in flax mills and linen factories," deals mainly with the linen industry of Belfast, but takes note of that of Great Britain also. With regard to the former, Mr. Osborne notes that 30,000 operatives are engaged upon flax in fibre in Belfast, five-sixths of these being women. He dwells with regret on the fact that tea and bread form far too large a part of the diet of these operatives, and also the scant attention which they pay to flannel in making up their clothing. This neglect to wear flannel is also remarked among the Lancashire cotton operatives. Mr. Osborne indicates several directions in which the conditions of work in the linen industry can be improved, as to regulation of temperature, ventilation, the use of fans, etc.; and he adds that the employers all seem anxious to do their best to secure the comfort and health of their work-people.

A NOVEL experiment is being tried by T. Kirkwood, of the firm of Kirkwood, Lemon & Co., Sudbury, Ont. An island has been secured from the Ontario Government in Lake Superior, about eight miles from shore, intervening water being quite deep. The island is about seven miles long and over two wide, and is profusely covered with ponds and small streams and timber very suitable for the working of beavers. The *Manitoulin Guide* says, "Mr. Kirkwood has now six pair of beavers, which he proposes to place on the island at once, and as they are very prolific, producing from six to eight twice a year, he may soon have a good colony." We may observe that the Marquis of Bute's well known attempts to create a beaver farm have proved a failure, but the conditions of Mr. Kirkwood's enterprise may be more favorable, for the beaver thrives only when isolated from man. The experiment will be watched with interest.

THE directors of James Chadwick and Brother, Limited, sewing cotton manufacturers, Bolton, in their report for 1893, regret that they have to report an unfavorable year's trading, which has resulted in their not only paying no dividend on the £250,000 ordinary shares, but having also to accept the vendors' "offer" to provide the deficiency of £7,955 required to make up the full cumulative preference dividend of 6 per cent. on the other £250,000. The balance-sheet shows that there was a net profit for the year of £15,630. In 1892—the first year of the limited company—6 per cent. was paid on the ordinary shares. This highly unsatisfactory showing may or may not be due to additional expenses incurred in connection with the "thread war," about which so much has been said of late. "Wars" of this kind, at any rate, are expensive games to play, and neither Coats's nor Chadwick's have shown a very meek spirit in their attitude towards each other of late.—*Textile Mercury*.

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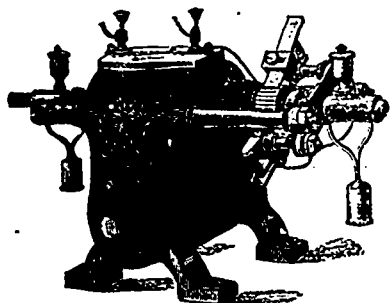
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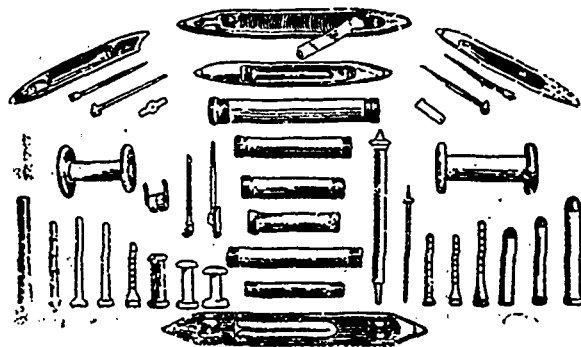
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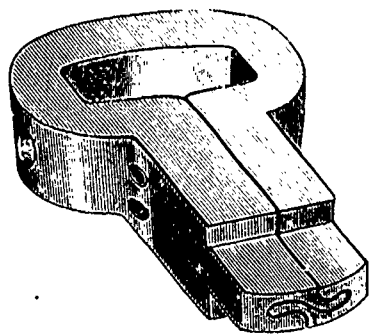
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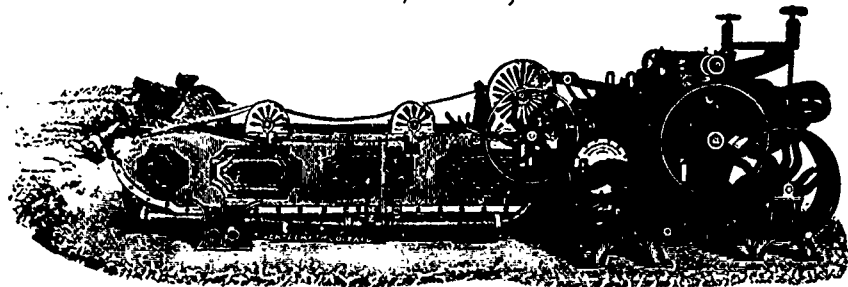


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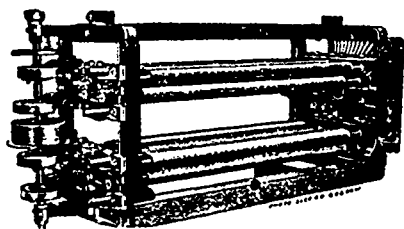
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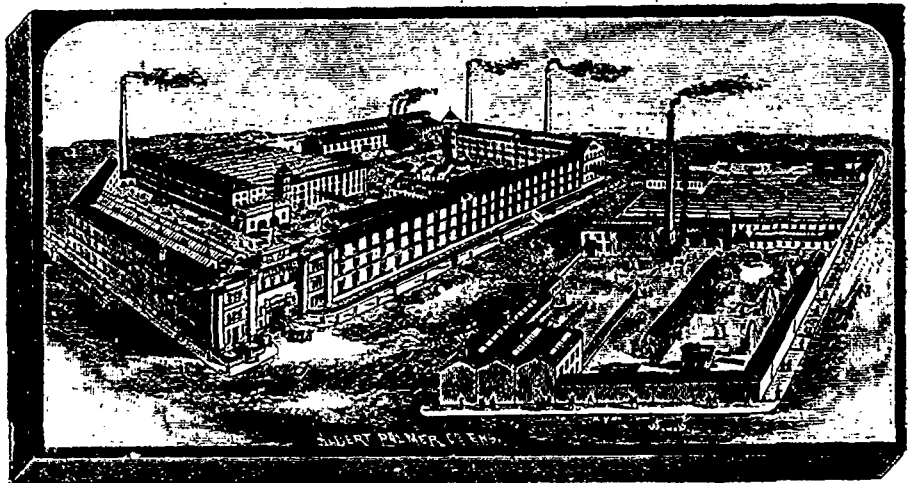
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