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CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XII.

TORONTO, JUNE, 1895


No. 6

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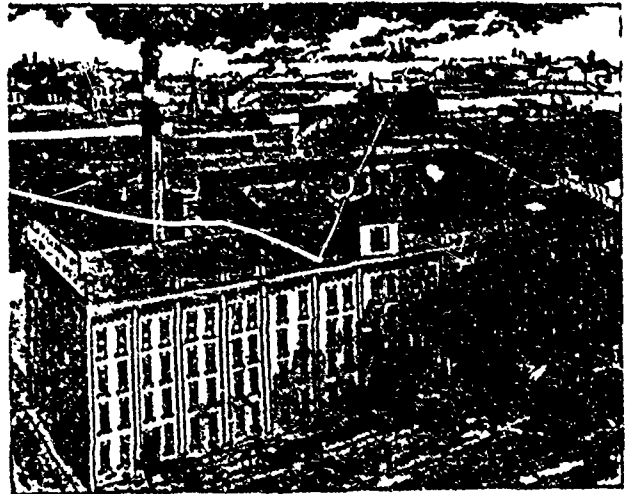
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SIZING WOOLEN AND WORSTED WARPS.

It is often necessary to size woolen, worsted and cotton yarns before weaving them, no matter whether they are coarse or fine in quality. Woolen yarn, especially, has a number of ends bristling out all around, as may be plainly seen by using a microscope. The composition of woolen thread is such that these irregularities in the surface of woolen yarn are much more frequent than is the case either in worsted or cotton yarn. They are, indeed, the characteristic of woolen yarn, and are the most important promoters of the felting process peculiar to that kind of yarn. As compared with cotton and worsted yarns, the number of the loose, projecting fibres is not in proportion to the quality of the thread, no matter how well spun. The lower grade

yarns are invariably rougher and more irregular than the finer grades.

It will thus be readily seen that the roughness alluded to must cause some difficulty in weaving, by the constant friction of the ends of the fibres in the harness and reed—a friction which is still further increased by the shedding and passage of the shuttle. Three objections may be urged against the weaving of woolen, worsted or cotton yarn in an unsized condition. First, the ends break constantly, and the frequent knotting required to remedy this causes a great loss of time, and besides results in a number of knots in the fabric. Secondly, in consequence of this friction, gritty yarn is produced, and these fibre bunches must necessarily be removed before the yarn can be woven. Occasionally, these knots become so numerous and the warp becomes so entangled that it is better after all to take it out of the loom and have it sized. Thirdly, yarn exposed to this mutual rubbing will never make a good cloth, for its surface assumes an unsightly appearance, and this defect can only be partly corrected in the finishing.

There are many kinds of yarn which can be woven in an unsized state without danger, but they are principally the lower grades, and are drawn in fairly open. The ground weave is often of a simple character, with a certain ease in the shedding, and for this reason there is less rubbing of the warp. These two points: the opening in the shed, and the character of the weave, are actually the most important factors in deciding the question whether the use of glue will become necessary or not. For instance, a yarn which can be used very well without size in a three-harness twill would require a strong size when used for a linen binding, even if the number of ends per reed and per inch in the filling had remained the same. Exact details can only be given after practical experiments have been made, but if the sizing is not too expensive, it is always better to make use of it, if there is the least doubt that the yarn will not work satisfactorily. The glue imparts strength, firmness, and greater resisting power to the yarn, and makes the projecting fibres stick to the surface of the yarn, thereby increasing its capacity to resist friction and a greater tension. Another virtue of the size is that the ends saturated with it can be drawn in closer than ends not so prepared; and the consequence is that the sized yarn is not interfered with so much in its free motions by the adjoining ends.

If sized yarn is examined through the microscope, it will be found to be smooth, compact, and straight, while the same thread unsized is rough and full of projecting fibres. It makes no difference what material is used for the sizing, it must comply with the following conditions: The agent must be capable of imparting to the thread the necessary firmness; it must not attack the colors, and in the final cleansing of the cloth it must be easy of removal; it must not have a disagreeable smell, which cannot afterward be removed readily. The agent most universally employed for the purpose is the leather gelatine, obtained by boiling the remnants of hides and skins of the tan yard.

A process used in Germany is described by the *Oesterreichs Wollen und Leinen Industrie* as follows. The boiling of size is a special occupation, and before the size can be used by the consumer, who received it as a jelly, it is to be mixed with water, according to its consistency. Glue is also used, and it can be converted into a jelly by boiling it with the leather wastage of kid glove factories. A composition which complies with every requirement is prepared with 500 grammes [17½ ozs.] of the best glue, 100 grammes [3½ ozs.] concentrated glycerin, and 9 liters [9½ quarts] water. The glue is steeped in cold water for more than 10 hours, after which the glycerin, previously dissolved in 1 liter [1 quart] boiling water, is added. The glue prepared in this manner is clean, free from lumps, and is readily washed out in rinsing and cleansing the cloth. The size must neither be used too hot nor too strong, for in sizing the yarn, if the temperature of the bath is too hot, that is, higher than has been established for practical work, the colors are apt to be injured. Again, if the size is too strong, the ends easily glue together, which in turn retards the weaving process; and if the size has a disagreeable odor, the washing process must be prolonged until the smell is removed.

Inferior qualities of size occasionally cause much trouble, for it is absolutely necessary to remove all traces of the size from the cloth, and this is very difficult to do sometimes without attacking the fabric. The warps are sized either by hand or by machines, and when the process is performed by hand, the warp is dipped into a large trough containing the size and is afterward passed between a pair of squeezing rolls, which press out a large part of the absorbed solution. The warp is then taken away, opened and dried, and when dry it is ready for beaming. In machine sizing, the warp beam is placed at once into the sizing machine, and, after passing over two or three rollers, the warp runs through the sizing bowl, between two squeezing rollers, whereby it is partly dried, and then over a large drum which has fans to blow heated air against the warp. When completely dry, the warp passes above a rotating brush to the beam and is now ready for weaving. Sizing warps by machine is much more expeditious than by hand, and the results are more satisfactory.

For THE CANADIAN JOURNAL OF FABRICS:

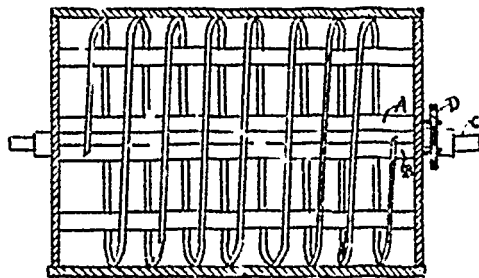
"WORKMAN TO SUPER."

BY G. D. RICE.

An Extensible Circular Waste Duster.—Various methods are employed to sift waste products and separate the fibre from dirt, flying and foreign substances. A new sort of an arrangement, which any mill mechanic can build, is described below. The peculiar advantage claimed for it is the ability of the operator to increase or retard at pleasure the travel of the matter to be sifted through the reel.

The waste is put in at the gear end, and is worked to the other end by the agency of the ribs that form the circle inside the cylinder. The skeleton of the reel, which is covered with wire netting, is formed by rings or ribs covered with a cloth, and whose ends are cut to a bevel and fastened upon two movable rods, *A* and *B*. These rods can be moved, the one toward the head of the reel, the other toward the tail, by means of the screws at the ends. In this way the travel of the material can be increased or retarded. The gears accomplish the opening and closing of the rings. The whole affair turns in the bearings *C*.

Of course the waste is dry, and therefore everything is lively and workable.



Sifting Waste.—Under existing circumstances, the best way of obtaining pure fibre is to have the wheat well-conditioned. The first reduction will produce middlings and smaller fibre. The latter product would be again reduced. The coarse fibre is carefully dusted, and again reduced. This is dusted, and either sent direct to the picker room or mixed with the other fibre previously dusted. The limit to the process is the degree of extraction at each successive operation, and may be much longer or shorter.

The machine is intended principally for separating fibre from the most inferior waste products, such as are found beneath the duster, etc. A microscopical examination of a handful of the fibre obtained will usually reveal the presence of particles of cotton, silk, and sometimes many other fibres in combination with the wool.

This is caused by the great variety of material which constitute the main portion of a bale of the stock dusted. The fibre cannot compare with the fine wool fibre in uniformity or regularity of structure, or in any of the essential features which are characteristic of wool as a good textile fabric. Nearly all the fine, delicate scales and serrations so prominent in the pure fibre are lacking.

For this reason the felting and fulling properties are diminished, if not wholly destroyed. The microscope also reveals a great dissimilarity in the diameter of the fibre, which is probably due to the constant wear and tear to which it is exposed. The absence of the serrations may likewise be attributed to this cause.

It may also be stated that the fibres are partially stripped of their scales and natural serrations by the mechanical operations. Yet the fibre saved from what is usually burned can be used if mixed properly with other fibre.

Shoddy Roving Makes Shoddy Yarns.—Great care is required in making a proper combination. The most scientific mule fixer in the world cannot set a mule so as to draw shoddy stuff into yarns smooth and good as woolen. Shoddy fibres are short, cut, broken and uncertain, and so an uncertain roving is made. Many rough and bad places in roving are reduced in size, and given a smoother appearance by drawing out, and so the aim is to draw out roving as much as possible.

The fine, lustrous, smooth and lengthy fibre of the woolen roving readily elongates one-half, and defects are easily and effectually covered up or removed. But the short-fibred, unreliable shoddy roving cannot be drawn out more than one-third, and often only a quarter, and therefore many of the defects in the roving remain and are woven into the goods.

In order to obtain a very even thread, some mills have found it very advantageous to double the roving. It is more costly and bothersome to spin yarns after this plan, also more waste is made, and so few mills adopt the method, unless exceptionally even goods are to be made from the yarns.

THE CHLORINATION OF WOOL.

The employment of chlorine in wool-dyeing and wool-printing has of late years received an impetus in directions previously little thought of. The addition of a little chlorine to the decoction of logwood has been recommended as increasing the dyeing power of the wool. Treating the wool with chlorine has a material influence in increasing its capacity for taking dyestuffs, and, although but little attention has been paid to this circumstance by wool-dyers, yet among wool-printers it has come largely into use, and enables them to produce fuller and faster shades than would otherwise be possible.

The method involves the treatment of the wool first with an acid, then with a solution of hypochlorite. The staple becomes soft and supple, and assumes a silky character; in dyeing it shows a greater affinity for the dyes than it did previously. Although not deteriorated in strength, it almost entirely loses its felting properties. On account of this feature, the process cannot be adopted for wool which has to be fullled; but it is of service where felting of the goods is to be avoided—for worsteds, underwear, woolen and half-woolen hosiery, etc., in which the felting property that occurs on washing is rather objectionable.

By the chloring of the wool the intensity of the shade dyed is increased to such a degree that, when dyeing with acid black, naphthol black, naphthol green, nigrosine, fast blue, water blue, and some others dyed in an acid bath, but little more than half the dye used on unchlorated wool is required; while with induline more even and intense shades are obtained than is otherwise possible.

The operation of chlorination can be done either in one or two baths. The choice depends upon circumstances and the judgment of the dyer. The process by the two-bath method, with subsequent dyeing in the second or in a separate bath, is (for 100 lbs. of wool) as follows: The first bath contains, for light cloths, yarn, etc., from 3 to 4 lbs. sulphuric acid, 168° Tw, and for heavier cloths and felt, where the penetration and equalization of the color is difficult, from 8 lbs. to 10 lbs. of acid. Generally speaking, a temperature of 170° to 175° F. is sufficient; although for heavy wool, and for wool with poor dyeing qualities, it is well to use the bath at the boil. The treatment lasts for half an hour, in which time the acid is almost completely absorbed.

The second bath contains a clear solution of 10 lbs. bleaching powder, which solution is prepared as follows: Dry bleaching powder of the best quality is stirred in a wooden vat with 70 gallons water, the mass is allowed to stand, the clear supernatant liquor is run into the vat, and the sediment stirred up and again allowed to settle, the clear liquor being run off as before; and 35 gallons more water is run in. The clear liquors of these three treatments are then mixed together to form the chloring bath. Special care should be taken that no undissolved particles of the bleaching powder should be left in, for if these settle on the wool they result in too great a development of chlorine, which injures the wool.

The goods, after being in the acid bath, are entered in this chlorine bath at a temperature of 70° F., which is then raised to the boil. If the acid bath has been strong, or been used at the boil, it is perhaps best to rinse the goods before entering into the chlorine bath. The hypochlorous acid disappears so completely from this bath that dyeing may be performed direct in the bath—for which purpose it is only necessary to lift the goods, add the required amount of dyestuff, re-enter the goods, and work until the bath is exhausted, which generally happens when acid dyes are used. If a separate dye-bath be preferred, this is made and used as is ordinarily done.

To perform all the operations in one bath the acid bath is made with from 3 to 4 lbs. sulphuric acid, and the wool is treated therein for 30 minutes, at 170° F., until all the acid has been absorbed. Then the bath is allowed to cool down to 70° or 80° F., the clear bleaching powder solution is added, the goods are re-entered, and the bath is heated to the boil. When all the chlorine has disappeared, add the dyestuff, and dye as directed above.

In printing on wool the chlorination of the wool is a most important preliminary operation. For this purpose the cloth is passed for 15 minutes, at 170° F.,

through a bath containing $\frac{1}{2}$ oz. sulphuric acid per gallon of water. Then it is passed through a cold bath of $\frac{1}{2}$ oz. bleaching powder per gallon of water, after which the cloth is rinsed and dried, and is then ready for printing.

Another method of chloring the wool is to pass the goods through a bath made with 100 gallons of water, 2 gallons hydrochloric acid, and 2 gallons bleaching powder solution of 16° Tw. As some chlorine is given off, it is best to use this vat in a well ventilated place.

MOISTURE IN WOOL.

The expulsion of the moisture, which is present in the wool fibre and in the woven fabric, is an operation of much greater importance than most manufacturers are apt to think. The drying process has several very important results, and each of these must be borne in mind as the process is carried out. First, it is intended that it shall drive out the moisture which is present in the cloth; secondly, it must leave the fabric free from all wrinkles and creases; thirdly, it must have the effect of leaving the piece of such a width and length as shall admit of its being finished at the correct standards in these respects.

In regard to the first point, says a writer in the *Textile Manufacturer's Review*, the drying of the wool or woollens, it is well known that in its normal condition wool always contains a certain amount of moisture. When the cloth comes to the drier from the scouring machine it has in it a large surplus of foreign moisture; but even after the great body of this is removed, there still remains in the wool a certain percentage of moisture which is actually necessary to the nature and well-being of the fibre. The drying process is wrongly employed, if it is used to expel this residue of moisture, which is a component part of the wool structure and make up. But the question at once arises, At what point does this normal amount of moisture begin? Scientific experiment shows that ordinary cleansed wool, either in fibre or in fabric, contains in the neighborhood of 10 per cent. of moisture, and in certain conditions of the atmosphere it may run even higher. This amount of moisture is a part of the fibre, and is resident in the cells and composition of the fibres. It is found also that it is quite difficult to drive off all the moisture in the wool, and it is quite impossible to expel it all without permanently injuring the quality of the fibre. If wool fibres are held at a temperature of 212°F., the moisture is rapidly driven out, but at the same time the fibre is gradually decomposed, and in a short time it is completely altered. If the wool is dried at about 100°F., a certain amount of this moisture is driven off, varying from 7 to 10 per cent. of its weight; but this does not remove it all. If the temperature is raised to the boiling point of water, as above, about 5 per cent. more is expelled. But, as already stated, this only results in the permanent injury of the fibre and of the cloth.

In the second place, with reference to the smoothing of the cloth in drying, little need be said. It is a fact that few realize, that a crease or wrinkle that is dried into a cloth is almost impossible to remove. That is, if a piece becomes badly wrinkled before it is put in the drier, and then when the piece is taken from the drier the wrinkles will show, they will almost certainly show all through the subsequent operations and disfigure the finished goods. Since this is a fact, it is necessary to make absolutely certain that in the drying all the wrinkles are not only smoothed out, but made to disappear before the cloth is taken off the machine. If the wrinkle happens to come out after the goods are dried and shows up then, it can only be removed by re-wetting and re-scouring. But in being sure that all wrinkles are removed before the goods are taken from the machine, it is at the same time necessary to avoid the danger of subjecting the fibres to a prolonged or excessive heating. In this matter also the mean must be chosen.

In the third place, as regards the stretching, in width and in length, the drier also has an important part to play. Different cloths require different treatment in this respect. As a rule it may be stated that the ordinary class of goods should be stretched about one-twentieth in length and about one-fiftieth or one-eighteenth in width. This will bring them out so they will finish about correctly. Light woollens lose quite a large percentage in width by the processes of dry finishing, and this must be taken into account in the stretching on the drier. When goods are steam lustered a considerable proportion of the stretch of drying is so set as to remain constant; so this class of goods must be given less stretching than others.

But further, if wool or woollen cloth is dried at from 100° to 110° F., it will again absorb moisture when it is exposed to the atmosphere. And the amount which it will take in will vary with the condition; for it will be equal to such an amount as is required to reach the normal quantity again. On the other hand, if the temperature used is the higher one of 200° F. or 212° F., then while the fibres will absorb a certain amount of moisture, that amount will be less than the original and normal quantity. From this it is evident that at the higher temperature such a change of fibre structure has taken place that the original amount of moisture cannot be regained. This fact is also evidenced by the change in the color of the wool, and in its elasticity and life. Such wool turns yellowish, and becomes brittle, dull and dead in appearance. These figures show that it is necessary to regulate the temperature of drying so as to avoid the last extreme, and this can only be done by keeping it at such a point as is suited to the actual condition and quality of the stock in hand.

A new cloth singeing machine, in which the hydrocarbon flame is used as a singeing medium, has been brought out in the States by W. E. Whittle and J. R. Reynolds, of Providence, R.I.

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A NEW wrinkle recently introduced in Chemnitz goods, is fine cotton hosiery with a silk finish. The yarn, as made up into hosiery, is very elastic and strong. The hosiery has a silk feel to it, and when rubbed between the fingers produces the rustling noise produced by pure silk. They are made in Germany by the house of Fondée. The misses' ribbed hosiery in the silk-finished cotton has all the elasticity of pure silk hosiery. The line also extends into fleecy-lined hosiery, and can be sold to jobbers for \$2 a dozen, so that they can be retailed at 25 cents a pair. The manufacturer has been experimenting eight months to obtain this silk finish, and since that hosiery has been on the market it has met with immense sale.

In his recent review on progress in bleaching, in *Lehne's Farber-Zeitung*, Dr. Kielmeier mentions an electrolytical process invented by Dr. Karl Kellner, which, whatever be its practical value, has at least the merit of being original. The necessary apparatus consists of a pair of rollers—the one iron, the other carbon—which, whilst rotating, are fed with an electric current by contact with wire brushes, and thus converted

into the two poles of a battery. The cotton cloth, before passing these rollers, is saturated with brine, and runs in company with an endless felt blanket, also saturated with brine, which is next to the iron roller, and receives the caustic soda formed, to deliver it further on into a tank filled with salt water. The chlorine liberated at the carbon roller accumulates in the cotton fabric. On issuing from between the rollers (whereof there may be several pairs) the cloth remains rolled up for some time, before it is washed, to prolong the bleaching process.

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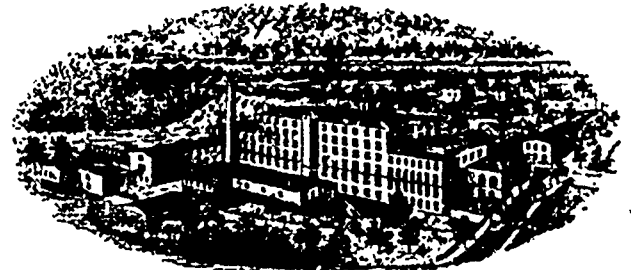
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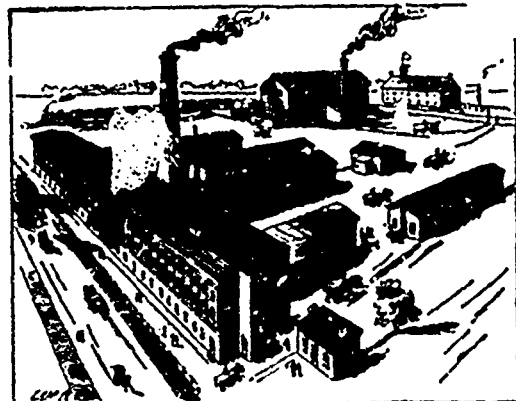
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THE WATERPROOFING OF WOOLENS.

One of the greatest difficulties in textile manufacture, and one of the most common troubles which presents itself to the overseer, is the almost unending change in the demands of the trade and the never-ceasing call for novelties in structure, finish or design which the market of to-day seems to require. The changes are so great, that processes which were well known ten years ago are obsolete now, and every year something new is cropping up to call for the attention and study of the overseer who would be in the front of his calling.

The question of how to make a textile fabric waterproof and yet preserve as much as possible its feel, finish, and appearance, is one which is of interest in many mills. This process, we are assured by a writer in *Kuhlow's Trade Review*, is not confined to woolen goods, but is practiced upon cottons, linens, and other kinds of cloths as well. Upon dress woolems, the intention is to make the cloth waterproof, and yet leave it so that it will permit the escape of perspiration and the gaseous exhalations from the body. Overcoatings, wrappings, hunting goods, and goods of this class, call for such treatment, and a few points as to the method of procedure may lead to good results. Many different methods have been and are in continual use, and so far as is known, there is not one to which anything like universal employment is accorded, but one or two may be mentioned which are recognized as safe and good for the purposes named.

In the first place, as to the goods to be treated, no matter what may be their nature, it is an absolute essential to success that they be perfectly clean. In dyeing a fabric it is a well-known fact that satisfactory results can never be obtained unless the cloth is free from all kinds of foreign materials, such as animal dirt, grease, soap, etc., and if a color is worked on to a piece which is not clean, any one knows how very simple a matter it is to work the color off again. Well, the very same principle applies when a fabric is to be made waterproof. If there is any sort of dirt upon the fibres of the cloth or in its meshes, dirt in the shape of oils, grease, animal products, vegetable materials, burrs, etc., the waterproofing material will act upon this dirt, not being able to get down to the body of the fibres composing the cloth, and just as soon as the dirt happens to be removed the waterproofing material is removed with it, and so the fabric becomes in that particular spot pervious to water and vapor. It is no doubt a fact that the want of success which sometimes follows from this process is due more to the uncleanness of the fabric treated than to any defect in the material used or in the method of its application. Flocks and loose fly upon the face or back of a woollen cloth are certain to produce imperfect work, and it is quite evident that a very few such places in a waterproofed fabric will render its chief characteristic of no avail. A spot here and there, no matter how small, is all that is required to make the process a complete failure. This

point, then, must be carefully borne in mind as being of the greatest importance.

The next thing to be noted is the vessel or apparatus which is used. The waterproofing material must be prepared by boiling, which is done in a tank or tub heated by direct steam or fire. In some cases a double tub is used and the steam enters between the inner vessel and the outer shell. The material is usually treated at this stage according to the kind of goods it is to be used for and the nature of the ingredients in the mixture. If starch enters into the mixture, the boiling must be particularly noticed, for at a certain stage in the boiling of a starch mixture the grains of starch are completely broken up, and when this point is reached the mixture is best calculated to enter into the body of a fabric. If it happens that the grains are not perfectly separated, the action of the mixture can only be indifferently successful, but the nature of the cloth will determine largely whether the boiling need be thorough or not, for a coarse textile fabric will require a less boiling of the waterproofing material than a fine one, and vice versa, a cloth with a fine finish will need a more thorough boiling of the mixture, which will also require to be of a more penetrative quality than one intended for cloth whose finish is less delicate. Whatever mineral substances are to be used in the mixture are ground up and dissolved in water, and afterward put into the boiler, and the starch, having been first dissolved in water, is then added. The whole is kept well stirred until a good boil has been reached.

Now for a cotton fabric the following will be a good mixture: Take one pint of alum and dissolve it in hot water; also take one pint of sugar of lead and dissolve in water; then mix the two and use cold water until the whole stands at about 5° B. The clear liquid which is on top is applied to the goods, while the sediment is used in making another bath. For a woollen or a part woollen fabric, take fifty quarts of animal glue and dissolve in water; add to this the same amount of potash alum, and mix with water to suit the finish desired. This mixture is then applied to the goods upon the ordinary sizing machine. Then take two and one-half quarts of tannin and one quart of waterglass and mix with fifty quarts of water, and apply this to the goods at about 50° C. (122° F.).

The waterproofing as stated is done upon a sizing machine, the cloth passing down into the material and up through the squeezing rollers, or sometimes passing only through the rollers and taking what material it can in the passage. Just what process is best will depend upon circumstances and the work in hand. The heavier the goods are, the more necessary will it be that they should pass through the mixture and get as much as possible of it into the body of the cloth. The pressure upon the squeezing rollers, as well as the other details in the process, must be kept as nearly uniform as possible, and once a correct proportion has been obtained, nothing should be allowed to change it. If per-

fect uniformity is observed all through the process, perfect work can be expected as a result.

It is well to remember, however, that when waterproofing any class of fabrics which have not already been fullled to their limit of shrinkage, the passage through the mixture is sure to shrink the goods in length and breadth, and unless some allowance is made for this in the construction of the goods, there will be trouble in finishing them to the desired standard. Of course the fulling of woollen cloths does much to counteract this effect, but nevertheless even here, upon light weight goods especially, trouble will be experienced unless care is exercised. In drying, every effort should be made to bring out the goods to their correct width, and if the proper kind of a drier is used, this can be done very satisfactorily. The making of the mixture, the coloring of it to suit somewhat the color of the goods to be treated, the passage of the goods through it, and the subsequent drying constitute the main points in the process, the rest of the treatment being similar to that for ordinary cloths which are not waterproofed. There are many recipes in use for waterproofing fabrics, and doubtless every finisher who has to work along this line has his favorites, but those referred to here may be said to have been proved by experience to be suitable for the desired purpose.

WOOL V. COTTON.

Every wool fibre consists of innumerable minute and pervious cells of a horny nature, chemically closely related to the human skin. The wool fibre forms elastic, cylindrical bodies, covered with a scaly layer of a great many epidermal cells, arranged pine-cone fashion. The cotton fibre, on the other hand, consists of a single cell, on the average more than an inch long, and having thick walls of impervious cellulose, which is chemically totally different from the substance of the human skin. The cotton fibre is flat, ribbon like, and impervious, like an india rubber band.

Dr. Henry G. Schlichter, who is a strong advocate of wool for clothing purposes, says:

"I cannot better describe the difference that exists between wool and cotton than by giving the view of Dr. Poore, the authority on which the writer of the above-quoted passages relies. Wool is more porous and more hygroscopic than vegetable fabrics. . . . While it absorbs moisture readily, it gives it off slowly, so that far less cold is produced by the evaporation from a woollen garment than from one made of vegetable fibre." Our clothing should afford the greatest possible facility for the removal of the liquid perspiration from the skin, and for the passage of the gaseous evaporation; and the facts above stated clearly demonstrate that the properties of wool, as regards perviousness and absorption, are peculiarly adapted to these purposes, while the properties of cotton are not. Cotton covers the skin with what Dr. Poore appropriately calls an "evaporation lotion"; and he admits that this evil—as he quite correctly terms it—can only to some extent be counteracted

by a looser method of weaving the cotton material. But the liquid perspiration remaining in direct contact with the body is one of the worst enemies to health, as the heat conductivity of water is not less than eighteen times quicker than of cotton, and twenty eight times quicker than of wool! Hence the chilling and other dangers of damp vegetable clothing and bedding. These dangers are still further increased by the fact that the cotton fibre, when wet, loses almost all its elasticity; and thereby the small amount of possible interstitial porosity (e.g., in looser fabrics like flannelette, or cotton stockinet) is lost, this, as is well known, depending upon the elasticity of the fibres. In this respect, too, wool behaves quite differently. Wool is the only textile material which, under all conditions of human life, retains its porosity, elasticity and hygroscopic value; which, while thoroughly protecting the body, properly regulates heat and exhalation, and which is proof against chill and cold.

THE STABILITY OF LOGWOOD COLORS TO LIGHT.

BY PETER T. AUSTEN, PH.D., F.C.S.

During the last few years great progress has been made in the manufacture of logwood products. Extracts of greater purity and strength have been produced, and, as a novelty, the granulated logwood product, known technically as "Hemolin," has been introduced. It occurred to me that it would be interesting to make a set of comparative dyeings, and determine by exposure if there are any noticeable differences in the stability to light of these various logwood products.

To this end I dyed swatches of woollen cloth with a high grade logwood extract, logwood chips of best quality, Hemolin XS, and Hemolin X, on chrome mordants and on tinctorial equality with 8 and 10 per cent. of Hemolin X, which was a blue black. In order that any possible differences arising from variations in the mordanting might not be overlooked, the swatches were mordanted in three ways:

1. Three per cent. chrome and 3 per cent. tartar.
2. Three per cent. chrome and 1 per cent. sulphuric acid.
3. Three per cent. chrome.

After dyeing the swatches were divided, and one-half was exposed to strong sunlight for a week, while the other half was kept in the dark.

In all cases the exposed samples lost slightly in bloom and gained in depth of color. The decrease in bloom was, however, more noticeable in the case of the 8 per cent. standard than of the 10 per cent. standard.

The difference between the tones of color after exposure is not very marked, but in the lighter dyeings the extract was not quite equal to the hemolins and chip logwood. No difference in the tones of color after exposure could be observed between the dyeings, both light and heavy, with the hemolins and chip logwood.

This is probably accounted for by the fact that the manufacture of hemolin is essentially an oxydizing pro-

cess, as is also the methods of curing chips. Hence the coloring matter in hemolin and chips is doubtless in the fully oxydized condition, or as hæmateine, while in the extract the coloring principle, hæmatoxyline, has been only partly oxydized into the coloring matter, hæmateine.

From these experiments it is therefore to be inferred that of logwood black on chromed wool those dyed with hemolin and chips behave a little better on exposure than those dyed with logwood extract.

WILD TALK ABOUT WOOL.

A Western Ontario contemporary, in attempting to enlighten its readers on the wool question, observes: "The fact must be faced that the wool of the world is competing with the Canadian and American staple. There is really nothing, with a few exceptions, that the United States wants from Canada, as her surplus productions are similar to ours, and she has to seek the same outlet that we do for her exports. And what the United States do want from us, such as wool, she can obtain on better terms from other sources, from the fact that our staple article is not suited to the line of goods they make, and they can do better with Cape and Australian wool."

To use the slang of the day, our contemporary is talking through his hat, and has evidently not learned the A B C of woolen manufacturing. Would he expect a glove maker to turn out a pair of kid gloves from a rhinoceros hide? Probably not, nor, if he knew anything of the conditions of the woolen trade, would he expect a knit goods manufacturer to produce a real merino undervest out of Leicester wool, or a tweed manufacturer to turn out a piece of fine fancy tweed out of Canada combing wool. Each particular class of woolen fabric can be produced to best advantage out of a certain growth of wool, and no other. Each country and clime will produce a grade of wool which cannot be exactly duplicated in any other quarter of the world. No country—not even one of so wide a climatic range as the United States—will produce all grades of wool to advantage. That country has been for the last half century, and always will be, a customer for native Canadian wools; while it has transpired, owing to the leveling up influence of the free wool tariff, that there is also a demand in Canada for certain grades of native American wool, used in certain specialties made in Canadian mills. Climate puts a distinct mark on the character of wool. Has Canada ever made a success out of merino wool? Every Canadian farmer who has had a long experience will testify that the merino wool, no matter how pure the breed of sheep, gradually loses its original character and becomes coarser; and no doubt if the experiment could be carried out through a sufficient number of generations of sheep, the originally pure merino would in this country be transformed into a type of wool approaching the Southdown or even the Leicester wool, which is so exactly suited to the climate of Canada.

Since the adoption of free wool the Americans have not taken less, but rather more, of the Canadian wools suited to the needs of those who manufacture lustre cloths; but the makers of fine tweeds and fancy woolen cloths have found, as English and European manufacturers long have known, that Australian and Cape wools will produce results which could never be attained by the use of American merino wools. With the experience they have had in the past two years, it is safe to say that the American woolen manufacturers will never consent to a duty on raw wool, no matter what changes may be made in the tariff on manufactured goods.

EXPORTS OF TEXTILES—GREAT BRITAIN TO CANADA.

The following are the values in sterling money of the shipments of wool and textile fabrics from Great Britain to Canada for April and the four months ending April of this year and last:

	Month of April.		Four months ended April.	
	1891.	1895.	1891.	1895.
Raw wool	£ 1,179	£ 532	£ 3,269	£ 1,461
Cotton piece-goods	38,502	24,169	203,046	206,801
Jute piece-goods	8,858	10,268	36,595	35,840
Linen piece-goods	6,814	7,515	47,453	56,828
Silk, lace	1,684	1,384	17,164	16,144
" articles partly of ...	2,404	2,642	12,065	10,492
Woolen fabrics.....	12,260	8,202	83,044	73,522
Worsted fabrics	22,819	24,236	186,417	186,183
Carpets ..	12,435	13,374	101,793	97,114
Apparel and slops	27,971	20,045	94,643	120,286
Haberdashery	15,174	8,464	81,203	60,643

A RAMIE spinning mill is now in successful operation at Long Eaton, England. The yarn produced is sent out as a substitute for silk in the lace trade.

THE troubles of H. R. Willis & Co., carpet manufacturers of Kidderminster, England, have excited a good deal of sympathy in the trade. The plant of the Excelsior mills, owned by Whittall Bros., who lately assigned, has been sold. The past has been a bad year for the English carpet trade.

GOLF is becoming more and more a fashionable game, and costumes for golfing and bicycling have afforded scope for some very profitable specialties among American manufacturers, and to some extent among the Canadian mills. The Canadian manufacturer who is wide awake and gets up attractive styles in these goods, will be rewarded for his enterprise.

WITH the rising tendency of almost all kinds of raw materials, and the general improvement of the dry goods trade throughout Europe and America, it seems surprising that Canadian woolen manufacturers do not get better prices for their goods. It is to be feared that many of our manufacturers are lacking either in self-confidence, or backbone, or ability to cope with the sharp buyers of the trade.

It is said that the experiments that have been in progress this year at Crefeld, Germany, under the auspices of the Chamber of Commerce there, with a view to introducing "carpet tying," by which imitations of Persian and Turkish carpets are made, are

proving to be a success. The tie looms are set up in the houses of the women who do the work, and the looms are cheap and easy of manipulation. Being well situated for facilities in dyeing, the Chamber of Commerce believes that this new industry will prove a rival to the oriental carpet industry.

THE Lehner Artificial Silk Company, Limited, whose process for making silk substitute was recently described in this journal, have started their machinery in Switzerland. The company purchased about twenty acres of land at Glattbrugg, near Zurich, and on this they have erected their plant. They have taken out patents for the process in Canada.

A PROTECTIVE coating for wood against boiling water and steam is prepared in the following manner: Mix 2 lbs. calcined plaster of Paris and 1 lb. pulverized asbestos with blood into a paint having the consistency of oil paint. The perfectly dry wood is coated with this mixture, and when dry a second coating, to which a little boiling linseed oil has been added, is applied. The wood is then allowed to dry for several days, and is afterward steamed, and, if possible dried again, after which it is ready for use. It is stated that this coating, which would be valuable for the dye vats, etc., is fairly cheap and that it does not peel off or blister.

THE project for a new commercial league or union for Great Britain and her dependencies and colonies which has been already initiated by Sir Charles Tupper, Sir W. Perceval, Sir John Lubbock, Sir Algernon Borthwick, and W. Becket-Hill, with the provisional approval of many influential personages, has so far progressed, says the *Times*, that it has received the written assent of the leading merchants, financiers, and traders of the city and port of London, and a complete scheme will shortly be promulgated inviting the adhesion of the great provincial centres of commerce and of all the colonial interests concerned. The idea is to follow, and, if possible, improve upon, the example of France and Germany, and establish a complete union for mutual concessions and arrangements in trade matters. The precise title and detailed objects of the league will have to be settled after full conference and correspondence with representatives of the colonies; but, so far, it is understood that "federation" is decidedly objected to, and that Imperial Commercial Union would be the name finding most favor.

REGARDING the results of the recent shipment of American woolens to Bradford, referred to in this journal, the Manchester correspondent of the *Drafter's Record* says: "It is reported on the authority of S. N. and C. Russell, of New York, that the shipment of Algerian cloth made recently for the United States to Bradford was sold at a loss. The trade under such circumstances is certainly not likely to develop. The shipment was in fact an experimental one, and is not likely to be followed by an extensive trade in American woolens over here. Shipments of American cotton fabrics are made regularly to this country, but they consist of spe-

cial descriptions used for the forward trade which have enjoyed a favorable reputation in the past, and continue to sell on the strength of it. The business is not large, nor does it grow appreciably. China is the best forward market for American cottons, Shanghai having in stock in the middle of April 287,145 pieces of American sheetings, against 164,240 pieces of English sheetings. On the same date there were 197,174 pieces of American drills in Shanghai, and 229,609 pieces of English and Dutch drills."

THE Dominion Government have decided not to follow the wishes of the Boards of Trade who petitioned for the appointment of a Federal Board of Customs Appraisers; but it is their intention to appoint to the appraising departments in the leading cities, men who are experts in special lines, and difficult or disputed cases will be referred to these. Either plan will be an improvement on the present condition of the appraising system. By the way, there is a hope that the question of undervaluations at the Customs in the United States—which is always a burning question there—may be settled in the dry goods branch by the formation of a "Customs Textile Association," which is now being organized, with headquarters in New York. The object of this association is not only to secure greater uniformity in the customs rulings, and prevent undervaluations in the customs, but to endeavor, if possible, to get the co-operation of foreign governments in declaring the current values of goods. The Treasury Department at Washington has given countenance to the proposed association, and has declared that they will "await with interest the full development of their plans." One of the officials at Washington points out the obstacles to be overcome. "The grave difficulty with which the appraisers have to deal," he says, "is the impossibility of knowing exactly the wholesale market value of all classes of commodities in the country of origin. Although every precaution is taken to enable appraisers to arrive at the exact dutiable value of importations, it is a physical impossibility, at least under our present arrangements, to advise the appraisers of the rapidly changing market quotations in all lines of goods. It has been suggested that great assistance could be afforded the Department by a system of international commercial agencies, which, while fixing values for commodities of local manufacture, could by a system of expeditious exchange notify the customs officials of all governments taking part in the plan of changes in quotations from time to time. In order that the reports of such agencies should be accepted without question, it would be necessary that they should be clothed with, at least, semi-official authority, and here comes in the great difficulty which private organizations have always had in endeavoring to co-operate with the Government—there seems to be no basis upon which this co-operation can be made official which does not involve discrimination against other similar organizations which might desire to enjoy the same privilege and distinction."

A MACHINE TO MAKE THE HAND-KNIT STITCH.

An American contemporary says the inventor of the Jacquard knitting machine, which is a combined weaving and knitting apparatus, has now brought out a machine capable of producing the hand stitch.

From the time when Lee invented the first knitting machine, in the 16th century, up to within 25 years ago, it was considered an impossibility to make this stitch by any kind of a machine. Within the last 25 years several attempts have been made, but proved utter failures in making a perfect turn stitch fabric, although hundreds of thousands of dollars have been spent in the effort. Now, however, it is an accomplished fact. Straight power machines are now being placed on the market from 8 inches and every two inches up to 60 inches in width, and every size from 4 inches up to 9 feet on circular.

On the straight machine, hand machines are made from 10 to 23 inches needle space, and from 3 to 14 needles per inch for the production of gloves, gaiters, knee-caps, mitts, body-belts, chest protectors, children's clothing, and for every description of fancy goods: hand machines with $2\frac{1}{4}$ to $4\frac{3}{4}$ inches needle space, and from 3 to 14 needles per inch, for the production of ladies' and gentlemen's undervests and drawers, ladies' skirts, scarfs, shawls, cardigan jackets, sweaters, boys' costumes, sailors' vests, bicycling and cricket costumes, etc., with 24 to 60 inches needle space and from 3 to 11 needles per inch, for motive power, for the production of the above named articles, as well as clothes, blankets and many descriptions of fabrics for clothing purposes. These goods, when filled, far surpass any known fabric for wear, both sides being alike.

The machines are made with single and double mechanism, with two, three or more heads, are built either all heads in the same gauge or in different gauges. Each head works independently from the others. Each head can be stopped without interrupting the other heads, is automatic, and fashioning can be made equal, if not superior, to Cotton's well-known fashioning frame, can manufacture any kind of goods in the turn stitch, plain, one and one rib, royal rib, double rib or cardigan. Any number of different patterns can be produced on this machine without any special appliances, the narrowing and widening being as easily done as on the Lamb machine. The production is nearly as large as on the ordinary knitting machine.

The machine can be set so as to fashion the web like the Lamb machine and will run equally smooth and as fast. The fabric is equally elastic in every direction, can be made very tight and firm, and has the advantage over all other knit fabrics in that it returns to its original shape. Many patterns made in rib goods hitherto only on jacquard machines can be produced on this machine without jacquard, by racking the needle bed and by putting the jacks in different positions. Made with jacquard, the machine produces any given design.

The operator can change at once from one kind of knitting to any other without altering or hanging over the loops. Different strengths and numbers of yarn may be worked on the same gauge, for instance, on a 6 needle to the inch machine, not only yarns can be used which are generally intended for this gauge, but also finer numbers commonly used on 7 and 8 needles to the inch. The commonest yarns may also be used. For striping in colors, as many as 8 colors can be used. The machinery is simple and can be worked by operatives after two or three days' practice.

A NEW AXMINSTER LOOM.

An exceptionally fine pile carpet has just been manufactured by the Brintons, on one of their new patent Axminster power looms. It has been specially made for H Gilbert Henderson, one of the directors of the company, on the occasion of his marriage, and is to be the wedding gift of the bridegroom to the bride. The carpet, which is intended for the dining-room at Sunnyside, measures 19 feet by 13.6, and weighs 282 lbs. The yarn employed is of very superior Saxony quality, and each tuft measures $1\frac{1}{2}$ inches in length. In design it is a fine specimen of Oriental art, and the

blending of the colors is rich and harmonious. It is doubtably the finest carpet ever produced in a Jacquard power loom.

The patent loom on which this remarkable carpet was woven is one of the most ingenious machines used in textile production, and turns out an Axminster of greater weight and strength than any other. The firmness and rigidity of the back of the cloth is only surpassed by the depth and softness of the pile, which to the tread is like turf that has had centuries of growth and tending. In weaving, the yarn is arranged on frames as in a Brussels loom, but the ends of the threads present themselves in line about the level of the weaver's face, each threaded through an eyelet in the vertical wires and cords connected with the jacquard. When the ends that have to appear in the pattern are raised, they are seized by a row of tweezers, and drawn out three inches. They are then cut off with a knife, and the tweezers carry them to their place in the design, where they are woven tightly in. A much larger number of colors can be introduced than into a Brussels,—in the carpet made for Mr. Henderson there are thirty-one. The fabric is a great success. Several looms have been busily employed for some months, and the produce is sold faster than it can be delivered. It is made in three-quarter widths, and the border is woven so as to need no mitreing. When made up in a square, it has the appearance of being woven in one piece.

The Patent Jacquard Axminster Loom is decidedly a man's loom, and will help to solve a pressing local problem. Yesterday, while watching those already at work, we saw the young and active weavers employed mount from time to time to the top, with an agility that no girl without the training and costume of an acrobat can hope to emulate.—*Kidderminster Shuttle.*

FLAX CULTIVATION.

The following is from the last report of the Minister of Agriculture of Manitoba. I desire to call attention to a branch of agriculture assuming proportions that bid fair to bring it prominently into notice, viz, the cultivation of flax, both from the value of the seed as well as of the fibre, and to call the attention of farmers to the advisability of growing this for seed in Manitoba, and for both seed and fibre in Ontario. The price realized by the flaxseed this year, the yield of which in Ontario is estimated at ten bushels per acre, the fibre being also valuable, whilst nearly double the amount of seed is raised in Manitoba, the fibre, however, in that province being without value, ranges at one dollar and upwards per bushel. The Mennonite settlers in Manitoba grow flax in large quantities. Manitoba seed finds a ready market in Ontario; the flax mills of Baden in Waterloo county paid out \$150,000 to the Pembina Mennonite settlers for this seed this year. These mills extract linseed oil from the seed, and the residue, known as flax-seed cake, finds a ready market in Europe. The mills above mentioned export 100 tons of this cake per week to the United Kingdom. I am informed that very little of this is consumed in Canada, only an occasional car load being sent to Quebec for seeding purposes, which realizes about \$25 per ton, or about $1\frac{1}{4}$ cents per pound. Out of one bushel of flax-seed about 40 pounds of cake are returned, and the balance is pure oil and refuse. The Mennonites sow flax as a catch crop after they can no longer sow wheat in the month of May, or on land newly broken by the process of simple harrowing. They use not more than half a bushel of seed to the acre, experience having shown that by sowing it thin, the plant bushes out so as to obtain the largest possible amount of seed. The seed also being very small in size, one half bushel to the acre would give to that area a larger number of grains to the acre than a bushel and a half or possibly two bushels of wheat. The soil for flax should not be too rich, where the object is to obtain fibre, and it would never be grown on the application of fresh manure. It is asserted that the richness of the soil in Manitoba accounts for the fibre not possessing the strength of that grown in Ontario, and the same fact is reported in many Western United States, where hundreds of thousands of bushels of flax are grown for seed alone, the fibre being found to be useless. The manager of the Baden mills expresses the opinion, based on a large experience, that flax could not be considered an exhaustive

crop as respects the soil, but the land requires to be kept perfectly clean. The latter is the test insisted upon, rather than the richness of the soil, the latter not being favorable to the growth of the fibre, although conducive to large yields of seed. These are conditions which seem to make the crop specially valuable on the rich prairies of Manitoba and the North-West for the seed product. I learn that, owing to the drought of last summer, Manitoba flax sown in May by the Mennonites did not come up until June, and after that its growth was very rapid, and the seed ripened well. This rapidity of growth should make it a valuable crop for the short seasons of the Canadian North-West, and if the seed grown there affords the properties of the Baltic seed, grown in similar conditions as respects land and climate, it may have a very considerable value for export to meet the growing demand for the products of this industry.

RECIPES FOR DYERS.

FROM FOREIGN SOURCES.

Brown on Wool.—For 100 lb. wool.—Mordant by boiling for 1½ hours in a bath of 3 lbs. bichromate of potash and 1 lb. sulphuric acid, then dye in a new bath containing 5 lbs. Alizarine Brown, 5 lbs. Alizarine Yellow GGW and a little acetic acid.

Stone Grey on Wool.—For 100 lbs. wool.—Make a dye-bath with 1½ ozs. Acid Blue 4S, ¼ oz. Titan Brown Y, and 5 lbs. acetate of ammonia, working at the boil to shade, then lift, wash and dry.

Dark Terra Brown on Wool.—For 100 lbs. wool.—Prepare dye-bath with 2 lbs. Titan Brown R, 1 lb. Acid Blue 4S and 5 lbs. acetate ammonia, working at the boil to shade.

Bright Blue on Wool (Fast).—For 100 lbs. wool.—Mordant by boiling for 1½ hours in a bath which contains 3 lbs. bichromate of potash and 2½ lbs. tartar, then rinse and dye in a bath which contains 7 lbs. Brilliant Alizarine Cyanine 3G, ½ oz. Alizarine Red SB, and 3 lbs. acetic acid. Enter at 100 deg. F., then slowly raise to the boil, and work for 1½ to 2 hours, lift, wash and dry.

Navy Blue on Silk.—For 10 lbs. silk.—Make a dyebath with 6 ozs. Acid Blue 4S, 6 ozs. Titan Blue 3B, ¼ oz. Titan Red and 8 ozs. acetate of ammonia, working at the boil.

Navy Blue on Wool (Fast).—For 100 lbs. wool.—Mordant by boiling in a bath of 4 lbs. bichromate of potash and 3 lbs. tartar for 1½ hours, then lift and rinse. Dye in a fresh bath which contains 14 lbs. Anthracene Blue WR, 13 lbs. Anthracene Blue WG and 3 lbs. acetic acid. Enter at 100 deg. F., heat slowly to the boil, and work for 1½ to 2 hours, then rinse and dry.

Indigo Blue on Cotton.—For 100 lbs. cotton.—Mordant for first steeping the cotton for two hours in a bath of 3 lbs. tannic acid; then fix by passing into a bath of 2 lbs. tartar emetic for fifteen minutes, then dye in a fresh bath which contains 2 lbs. Induline vat blue, working at 180 deg. F., to shade, then lift, wash, and dry.

Olive Brown on Cashmere.—For 100 lbs. cashmere.—Mordant by boiling 1½ hours in a bath of 3 lbs. bichromate of potash and 2½ lbs. tartar, then dye in a bath containing 10 lbs. fustic extract and 5 lbs. logwood extract. Work for 1½ hours at the boil, then lift, wash and dry.

Orange on Cotton Yarn.—For 100 lbs. cotton yarn.—Mordant the yarn in the usual way with 4 lbs. tannic acid and 2½ lbs. tartar emetic, then dye in a bath which contains 2 lbs. New Phosphine G., working at 180° F. for the hour, then lift, wash and dry.

Olive Green on Wool.—For 100 lbs. of wool.—Prepare a dye-bath with 10 lbs. Glauber's salt, 4 lbs. sulphuric acid, 8 ozs. indigo powder, 5 ozs. Archil Substitute, and 11 ozs. acid yellow (these dyes are made by Read Holiday & Sons). Work at the boil to shade, then lift, wash and dry.

Dark Brown on Cotton.—Prepare a bath with 30 lbs. salt, 1 lb. Diamine Brown B, 1 lb. Diamine Brown V, and 1 lb. Diamine Yellow B. Work at the boil for 1 hour, then lift, wash and dry.

Dark Green on Wool.—For 100 lbs. wool.—Prepare a dye-bath with 2 lbs. Fast Green Bluish, 2¼ lbs. Fast Yellow, 5 lbs. coppers, 2½ lbs. bluestone, 4 lbs. oxalic acid, and 2 lbs. logwood extract. Work at the boil to shade, then lift, wash and dry.

Bright Navy Blue on Cotton.—For 100 lbs. cotton.—Prepare a dye-bath with 3 lbs. Sambesi Black B, 10 lbs. Glauber's salt, and

5 lbs. soda. Work the goods in this for an hour at the boil, then rinse and pass into a bath of 2 lbs. sodium nitrite and 6 lbs. hydrochloric acid, work for ¼ hour, then rinse and pass into a bath of 8 lbs. amido-naphthol ether (25 per cent. paste), work for fifteen minutes, then wash and dry.

MADDER DYEING.

When thoroughly-washed wool is boiled in distilled water with pure alizarine, it acquires a reddish-brown color, of considerable intensity. This color is quite distinct from that of the alizarine itself, and is probably due to a chemical combination between the wool fibre and the dye. If the water contain even a small amount of lime salts, a much redder shade is obtained, the calcium probably acting as a mordant, with production of calcium alizarate on the fibre.

The color obtained by heating unmordanted wool with madder varies from pale salmon-red to dark brownish-red, according to the proportions used, and this color possesses a considerable degree of permanency, and is frequently employed in the production of pale drab, etc., shades. This process, however, is not so irrational as is frequently stated, the color being in most part due to the formation of the above-mentioned calcium or magnesium alizarate, since lime and magnesia are natural constituents of the madder root. The color of the calcium alizarate thus obtained is much modified by the brown and yellow extractive matters of the root.

Up to the time of the introduction of artificial alizarine, madder was very extensively employed by the wool dyer, both for producing red shades, and as the red or brown constituent of compound shades, *i.e.*, in all classes of browns, olives, greys, etc.; and although artificial dyes, especially nitro-alizarine and anthracene brown, have largely replaced it, still, for some purposes—such as the dyeing of closely-felted materials (*e.g.*, wool hat bodies)—madder is still much used on account of its greater penetrative power. This property is intimately connected with, if it is not due to the presence of undecomposable rubran in the madder root.

It has already been incidentally mentioned that madder is employed as a means of promoting fermentation in the indigo vat. When this is the case there is a notable quantity of coloring matter fixed upon the wool, probably as lime lake, as may often be recognized when testing wool dyed indigo-blue.

With the different mordants madder gives a considerable variety of shades, corresponding in general character to those produced by alizarine, with the exception that with iron mordant it is not possible to obtain on wool the normal bluish-purple color of the iron-alizarine lake.

With chromium mordant, madder produces claret-brown or maroon shades, or (with small amounts of dyestuffs) reddish drabs. When bichromate of potash is the mordant employed, wool dyed a medium depth of shade, with 30 to 40 per cent. madder, should be previously mordanted with 3 to 4 per cent. of bichrome. For pale or for very deep shades, the amount of mordant should vary in proportion to the amount of dyestuff employed, although the coloring matter is not destroyed by excess of mordant, as is the case with logwood.

It may here be incidentally mentioned that the amount of chromium fixed in an available form during the mordanting process depends largely upon the length of time the wool is immersed at a boiling temperature, and therefore the time occupied in raising the liquid to the boiling point should be curtailed as far as is consistent with a regular deposition of the mordant. The addition of sulphuric acid to the mordant bath in sufficient amount to liberate chromic acid (4 per cent. bichrome, plus 1.3 per cent. sulphuric acid, 168° Tw) gives a somewhat darker shade, but tends to produce irregularity; while the use of assistants that exert a reducing action upon the bichrome, such as cream of tartar or tartaric acid, has only the effect of rendering the shade bluer. Oxalic acid—sometimes a useful addition to bichrome mordant—has no beneficial action in this case.

If chromic salts be employed as mordant instead of bichromate of potash, the result is the production of the somewhat bluer browns obtained by adding reducing agents to the bichromate bath. Thus

the 4 per cent bichrome may be replaced by 4 per cent. fluoride of chrome, or by 14 per cent. of chrome alum, but in either case 3.4 per cent of oxalic acid must be added.

The character of the water employed for dyeing has a considerable influence upon madder dyes, and although, perhaps, of less importance with chrome colors than when other mordants are employed, it is still an important factor. With bichrome mordant, a fuller color is obtained in pure water than in water containing 4 or 5 degrees of temporary hardness; but the presence of sulphates of lime and magnesia has not much action. When chrome alum or fluoride of chrome is the mordant used, a certain amount of chalk renders the color fuller, about 0.2 part per 1,000 giving the maximum effect.

In conjunction with chromium mordant, madder may also be applied with the single-bath process, although in this case the shades produced are somewhat paler and browner than those obtained when the mordant is applied first. If this method of dyeing be adopted, the amount of mordant used should be very small—0.5 per cent. of bichrome, with the addition of an equal amount of sulphuric acid, being sufficient.

When dyeing by the single-bath method, it is an almost universal rule that much less mordant is required than by the usual process—a fact easily explained when we remember that only a small proportion of the mordant used in the mordanting bath is actually fixed upon the wool, and this small amount only comes into contact with the coloring matter in the dyebath; whereas when mordant and dyestuff are used together, the whole amount of the former is available for combination with coloring matter.—*Dyer*

HAMILTON COTTON CO.

It is with no little pride that Hamilton boasts of the possession of some of the largest and best-known institutions in the country. Perhaps no establishment identified with her great commercial interest is more prominent than the Hamilton Cotton Company, not alone for extent and magnitude of the business, but also for the influence it exerts in her adding the city's name as a manufacturing centre. The Hamilton Cotton Company was established in 1850 by its present proprietors, R. A. Lucas and James Young. These gentlemen determined from the outset to maintain the quality of their product at the highest obtainable standard of excellence, to introduce new ideas into the business, and by strict accuracy retain a trade once secured. As a result the output has been largely increased, sales have been steadily augmented, new lines have been added to their product, various minds have been enlisted in the work and improvements made, and, in fact, every legitimate means have been adopted to make the firm name a guarantee of the best in its line of manufacture. The product of the Hamilton Cotton Company includes cottonades, denims, beam warps, carpet warps, single yarn, hosiery yarns, cap yarns, twines of white and fancy colors, lamp wick and webbings. The company have gained a wide and popular distinction for their fast stainless black hosiery yarn. They have been making a specialty of their hosiery yarn lines, and the success met with is certainly gratifying. The mills of the company are situated at No. 184 Mary street. It is a large three storey brick structure, having a frontage of 250 feet on Mary street, while various additions occupy the ground at the back of the mill. In point of equipment, as well as arrangement, these mills equal any institution in the country. They are as near perfect as possible, and furnish employment to about 200 hands. The trade of the company extends throughout the country, and their goods have an enviable reputation wherever sold. Their fabrics have come in direct competition at various exhibitions, and in every instance have carried off the diplomas and medals for superiority. Of course this high standard of excellence could not exist unless the mills had intelligent management and careful supervision in every department. This effects great credit upon Mr. Young and those associated with him, who from the start has guided the interests of the company. He possesses a thorough knowledge of various details and features of the business, hence

the success of the institution. Mr. Lucas directs his entire time and attention to the wholesale grocery business of Lucas, Steele & Bristol, of which firm he is the executive head. Messrs. Lucas and Young are among Hamilton's most enterprising and progressive citizens, whose standing in the social, political and financial world is above reproach.—*Hamilton Herald*.

NEW DYING PROCESS FOR COTTON.

The Farbenfabriken vorm. Friedr. Bayer & Co., of Elberfeld, have introduced a new process for cotton dyeing. As is well known the cotton shades of certain direct dyeing colors become far more resistant to the influences of the atmosphere by an after treatment with sulphate of copper (a process which is patented by that firm.) This effect is shown in the use of their two products Benzo Azurin G and 3 G, as by an after treatment with copper they attain the same fastness to light and air as indigo. This most important property was mentioned when these two colors were brought out.

In order to fix the colors better, a process slightly different to that which has been applied up to now has lately been brought into use, viz.: After treatment with bichromate of potash and sulphate of copper (bluestone), the process is as follows: After the cotton shades dyed in the usual manner with direct dyeing colors have been rinsed well, they are entered into a boiling bath consisting of 5 per cent. bichromate of potash and 2 per cent. sulphate of copper (of the weight of the goods), and worked there for a quarter of an hour. This very simple and cheap after treatment causes the shades to become much faster to washing and very fast to air and light. This process was tried with direct dyeing cotton colors, and of these they found Benzo Azurin G and Diazo Brown R extra most useful. The first of these gives a blue exceedingly fast to light and air. By the after treatment the shade is only changed in so far that it becomes somewhat greener and duller. The fastness to washing is considerably greater, although not quite perfect. Diazo Brown R extra gives in this way very full catch brown shades, the dye tests being absolutely fast to washing, as well as being fast when washed along with white, and also exceedingly fast to light and air.

The dyeing recipe is as follows: 1st bath. Dye for one hour just under boiling point. (a) Benzo Azurin G with 10 p.c. Glauber's salt; 2 p.c. soap. Rinse well. (b) Diazo Brown R extra, with 10 p.c. salt. Then rinse. 2nd bath. Treat in a fresh bath for ¼ hour, boiling with 5 p.c. bichromate of potash, 2 p.c. sulphate of copper. Wash and dry. The agents for the Farbenfabriken in Canada are the Dominion Dyewood & Chemical Co., Toronto.

PROVINCIAL EXHIBITION AT MONTREAL.

The Agricultural and Industrial Exhibition of Montreal for 1895 will open on the 12th September, and remain open until the 21st September.

The exhibition this year promises to be on a more extensive scale than has hitherto been attempted, and a large number of manufacturers who in previous years have taken little interest in exhibitions will this year be numbered among the exhibitors. A number of Canadian textile manufacturers, who have been conspicuous by absence on former occasions, seem this year inclined to add their forces for the purpose of bringing the exhibition to a successful consummation. The premiums offered have been greatly increased, and manufacturers are permitted to exhibit their products entirely free of charge. There have always been objections against offering prizes for manufactured articles, as the custom is open to misjudgment. For this reason many manufacturers have steadily refused to place their articles on exhibition. At the coming exhibition textile manufacturers may show their wares without any diffidence on this score, as prizes will not be given for specific articles, but for the appearance of the exhibit as a whole, and for general excellence.

ROBERT SIMPSON'S new retail dry goods store, Toronto, now being started on the site of the burnt store, will be six stories high, fireproof throughout, and the cost is estimated at \$200,000.

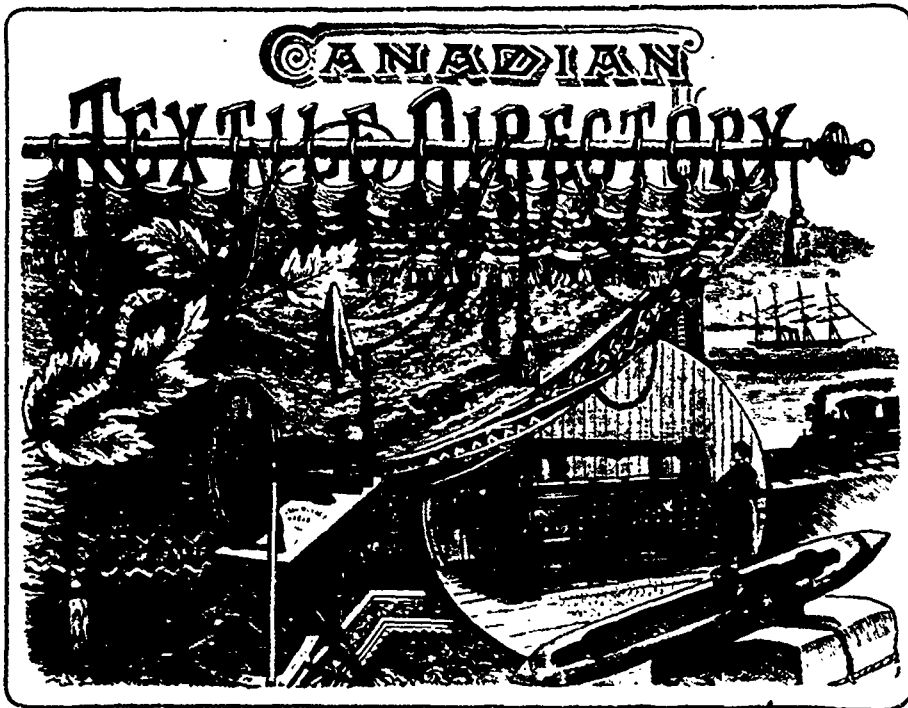
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It gives lists of all Manufacturers' Agents, Commission Merchants, and Wholesale and Retail Dealers in the Dry Goods and kindred trades of Canada Also, Statistics, Tables of Imports and Exports, Customs Tariffs of Canada, Newfoundland and the United States, the Canadian Boards of Trade and Textile Associations, and other information The Fourth Edition will also include the Trade of Newfoundland.

The Price of the CANADIAN TEXTILE DIRECTORY on and after day of publication is **\$3.00**, but those who order it in advance are given a **discount of \$1.00.**

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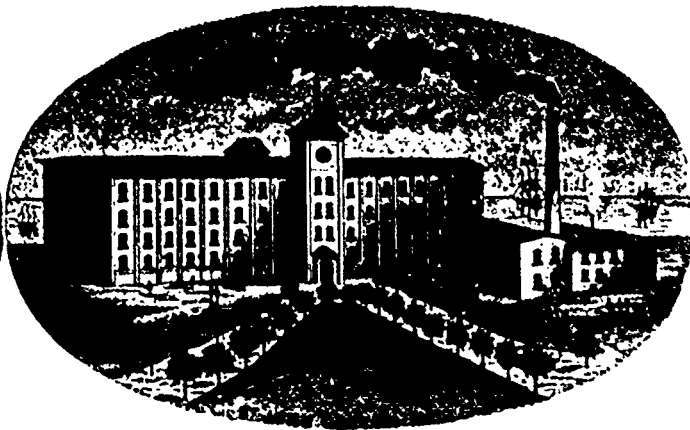
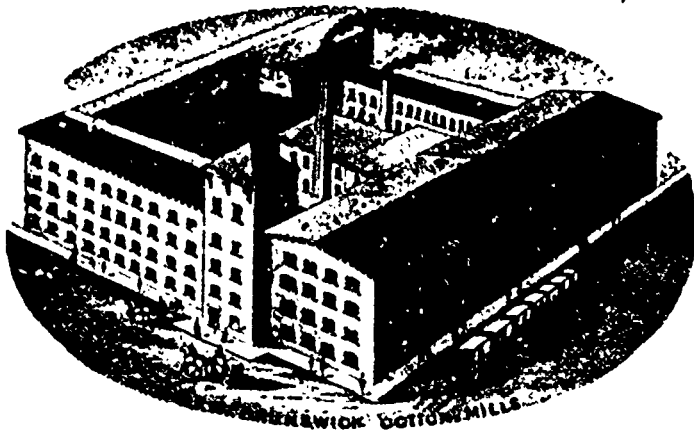
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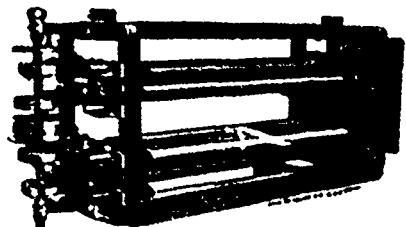
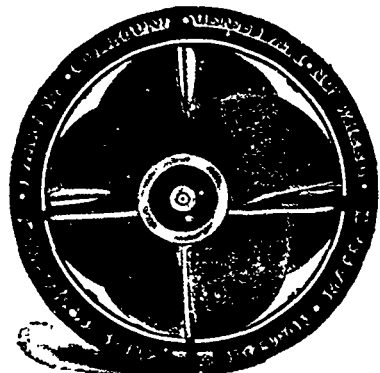
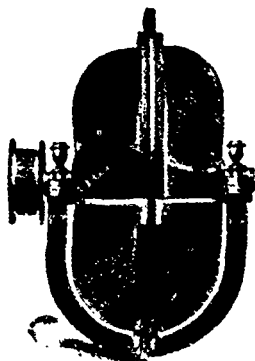
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Textile Design


The following designs from late English patterns will be found to make up into very attractive goods :

TWEEDS.

<p>No. 1.</p>  <p>Pegging Plan.</p>	<p>Warp :</p> <p>6 Black 6 Red Fawn and White 6 Black. 6 Green Sage. 4 Scarlet</p>	<p>West :</p> <p>6 Black 6 Cream 6 Black. 6 White 4 Scarlet.</p>
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1160 ends.
31 picks per inch.
4 ends in a reed,
375 yds. per oz. twisted, 35 inches wide in the loom
Well milled up before raising. 28 " " when finished
Pile not too long when finished. Melton finish.


WARP.

<p>No 2.</p>  <p>DRAFT.</p>	<p>1 Scarlet, 375 yds. per oz twisted 6 Black, 186 " " 1 Scarlet, 375 " " 1 White, " " " 2 Lavender, " " " 1 White, " " " 2 Old Gold 186 " " " 4 Black, " " " 2 Old Gold " " " 1 White, 375 " " " 2 Lavender, " " " 1 White, " " "</p>
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1160 ends.
30 picks per inch.
4 ends in a reed.
38 inches wide in the loom.
28 inches wide when finished.
Natural finish.

West same as warp.

COATING.

 <p>DESIGN.</p>	<p>Warp : 8 Black. 8 Cigar Brown.</p> <p>West as Warp.</p> <p>2/40 skeins warp and weft woolen.</p>
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16 ends.
72 ends per inch.
72 picks " "
18's reed.
4 ends in each split.
72 inches wide in the loom.
56 " " when finished.
Fine drawn finish on the vegetable tease.

LACTIC ACID IN WOOL DYEING.

This bichrome assistant, which is now being extensively used in the best dyehouses in the United States, is exciting considerable interest in England. Lactic acid has been brought to a very high state of perfection for use in wool dyeing, and its cost at the same time has been greatly reduced. Its use is of the greatest advantage in dyeing with alizarine, fustic, logwood, or any of their combinations. As compared with cream of tartar in equal percentages, it gives fuller and deeper shades, proving that where lactic acid is used as an assistant with bichrome, there is a considerable saving in dyestuff. In dyeing with logwood it helps to give an excellent black, and, in addition, it has the other advantages of leaving the wool soft and lofty and assuring level dyeing. Wherever lactic acid is fairly and properly tested, it is sure to be permanently used.

What is claimed for lactic acid is that it produces and deposits upon the fibre chromium oxide, which is the agent necessary for properly fixing the colors. Being a mild acid it does not tend to harshen, but, as above stated, has softening qualities. We hope shortly to produce some tests showing these advantages, and at the same time to give some further information concerning it. Lactic acid, although known for years as a valuable assistant with bichrome, has not been introduced commercially until recently, in consequence of its high cost, but through Mr. Avery's efforts its price is now less than that of cream of tartar. Moreover, in using it there will be found to be an absolute saving of dyestuffs in many

cases. Thus a smaller percentage of certain dyestuffs will give as full a shade after mordanting with bichrome and lactic acid as can be obtained with a larger percentage after using sulphuric acid or tartar as the mordant assistant.

PAPER HOSIERY

With stockings and socks made of paper, the latter to be sold at three cents a pair, the work of the darning and the laundress: both would be considerably diminished. Up to the present time the expense of splitting, twisting and preparing paper yarns for commercial use has been so high that manufacturers of fabrics have found little inducement to use them in making textiles. Lately, however, a number of paper pulp manufacturers are said to have been at work on the problem of producing cheap pulp yarns, with the result that a new process has been formulated. The old method of splitting, twisting, etc., has been done away with, and a much simpler and inexpensive mode has been adopted.

When finished and dyed the appearance of paper hosiery is similar to ordinary fabric goods. The paper yarns are made pretty much after the plan of making common paper twines, except that the former are put through certain special processes. The principle is that of making a sort of nap on the yarn. This is done automatically. Ordinary paper twine or yarn is too smooth, but a good gigning up gives the yarn a nap and this imparts softness. After the knitting has been done, the goods are placed in a sizing bath made from potato starch and tallow, which imparts solidity and durability to the texture.

THEY WANT TO FOLLOW CANADA.

In Canada the itinerant vendors of bankrupts' stocks, real or bogus, are known as "transient traders," and the Ontario Legislature has just passed a Transient Traders' Act, the like of which would be very welcome in this country. By that Act persons entering a town and taking premises temporarily for the purpose of "selling off" alleged bankrupt's stocks, have to pay a fee of £50. Nor is the provision confined to avowed trading of this kind, or it might be successfully dodged. Any person beginning business without having resided in the town for the previous three months, is liable for the fee. A similar law in this country would work a double benefit; it would protect traders from unfair competition, and, at the same time, save the public from being gulled into buying rubbish palmed off upon them as bankrupt's stock, sold at an alarming sacrifice. We direct the attention of the commercial members of Parliament to the subject. They cannot be said to be too zealous in the discharge of the duties they owe to the business community, which, in a sense, they particularly represent. They have now an excellent opportunity of effecting a most useful and popular piece of legislation.—*Drafter's Record, London.*

CHANGES IN EASTERN TEXTILE TRADE.

The trade in Japanese jute rugs is growing, and Dundee is beginning to prick its ears at the developments revealed in connection with the industry. The low price of silver makes it impossible for British firms to sell goods in the East, where a similar trade exists there. For this reason Manchester has almost entirely lost her vast Eastern trade in cotton yarns, Bombay having seized the China market, besides supplying most of the wants of India. Japan has also shown her ability to compete for the Eastern trade in cotton yarns and cloth. Calcutta makes it impossible for Dundee to sell jute goods in the Dependency, and she has also driven the Scotch centre from other markets, besides shipping burlaps to Dundee itself. The foreign trade in coarse jute fabrics is gradually passing into the hands of Calcutta, and if Japan is to continue in her present course the outlook for the fancy jute trade of the Forfarshire town will be very poor indeed. Inventive genius, industry, artistic skill, all are useless pitted against the competition of countries sheltered by cheap silver, against the products of gold standard countries.

Foreign Textile Centres

MANCHESTER.—The continued firmness of Egyptian cotton is having a serious effect upon the cost of producing the finer classes of cotton hosiery, lace, and other goods manufactured from Bolton counts of yarn. Upon some classes of ladies' hose the increased cost is about 5d. a dozen, with the result that the margin of profit has been considerably reduced, and the necessity of taking steps to protect themselves is becoming more strongly felt by manufacturers. The profits of sewing cotton manufacturers must have almost, if not entirely, vanished since the advance set in, and the next balance-sheets of the leading companies should afford curious reading. The estimated stock of Egyptian, at Alexandria, on the 15th May, was estimated at 490,000 cantars of 98 lbs. each, against 1,236,000 cantars at the corresponding period last year, and 1,195,000 cantars in 1893. The receipts at Alexandria since September 1st have fallen off 350,000 cantars compared with last year, and 570,000 cantars compared with 1893. In other words, a short supply and not speculation merely has had to do with the serious advance in prices of the fibre, and home trade buyers interested in the sale of fine goods would do well to note these facts. At the time of writing, fair Egyptian is quoted at £6 4s. 4d. One day recently there was no Egyptian cotton sold in Liverpool—a condition of affairs unknown in the market for twenty years. In cloth the position is decidedly unfavorable. Indian demands continue sluggish, and manufacturers of Bombay shirting are stopping looms. China is rather more active in drills, sheetings, and heavy goods, but prices are very low. Miscellaneous markets are supplying their wants more readily, while the home trade houses are busy under the influence of the present charming weather. At Darwen some 1,400 looms are still idle, and in Blackburn and neighborhood, a good deal of quiet stoppage is going on. One or two failures have taken place in Darwen and neighborhood. Great regret is expressed at the suspension of J. C. Milns & Co., cotton spinners and manufacturers, Radcliffe and Manchester. The firm were engaged in the heavy fancy trade, and had 10,000 spindles and 600 looms. It is said all trade creditors will be paid in full. According to report, the cause of the stoppage is a demand for withdrawal of capital on marriage settlements account. Some short time ago Miss Milns married a son of the Duke of Argyll, and she is now a widow. This and other family matters are stated to be the cause of the disaster.

BRADFORD.—What is described as the "Mohair boom" still continues, and greatly enhanced prices continue to be paid for goods which cannot be delivered before the end of the year. The visible supply of mohair goods has already practically vanished. Whether the British buyers of dress goods will generally return to the wearing of bright fabrics is still doubtful. There is, however, every reason to believe that in the warmer and drier climates to be found on the Continent and in North and South America, a large quantity of bright dress fabrics are sure to be worn. The rush on mohair goods for costumes and jackets is certainly interfering to some extent with the fine costume serge trade, and the greater permanency of the finish of the former must lengthen the possibility of their run. For America there is a decrease in the inquiries for both worsted coatings and linings, which arises from the expectation that slight concessions in prices may be obtained following on the fall in wool at the London sales. In yarn spinning there is no new feature to report. Everyone appears to be busy, and there is no doubt that to-day Bradford is turning out more yarn than at any previous time in her history. Although the mohair spinners are so busy, there is little demand for the braid trade, which is quiet. The tendency towards the use of bright dress fabrics has caused Bradford manufacturers to give more attention to the introduction of silk into their dress goods novelties.

LEEDS AND HUDDERSFIELD.—In Leeds trade has been quite animated, as the fine weather and the near approach of the holidays have necessitated pressure being put on to complete orders in time for Whitsuntide. There are hopeful reports from most districts,

as the agriculturists are more prosperous, and the iron trade shows signs of improvement. There is also an unusual freedom from labor disputes, and the textile industries are in a healthy condition. In the heavy woollen districts also business is improving, and the leading firms are well employed, some on important army contracts, and others on orders for the home and American markets. From the latter there are numerous inquiries for reversibles and better class serges. The carpet industry is quiet. The death is reported of Mark Hirst, sole partner in the firm of M. Hirst & Co., carpet manufacturers, Dewsbury.

NOTTINGHAM.—The lace trade continues dull. Several stocks have been offered for tender lately and this has not improved the outlook. In fancy laces some of the latest novelties in English embroidery, fine Valenciennes, and imitation guipures are selling in moderate quantities for the home and nearer continental markets, but the aggregate of sales is falling much below the average. The silk lace trade shows a downward instead of an upward tendency. The demand for silk falls and veilings is slow, and finishers, instead of being overpressed with orders, are only partially employed. Silk laces and flouncings sell slowly, and much of the machinery engaged in the production of these goods is either standing idle or working short time. Bobbin nets and other plain goods are selling in good quantities, although the inquiry for embroidery purposes shows a falling off. Stocks of these goods are kept as low as possible, and manufacturers do not produce except for *bona fide* orders. Although prices show less tendency to advance, they continue tolerably firm. As regards silk nets and tulles, a few special qualities are moving. Prices, however, continue low. Both the lace curtain and window blind branches continue fairly active. Despite the competition met with from outside districts, there is a large output of goods for the home market and export. Business in the hosiery trade is still favorable. Orders in many cases do not reach a large total, but still there is more briskness than was the case last year, and the tone of the market is decidedly better.

SOUTH OF SCOTLAND.—There has been no definite change in the South of Scotland tweed trade. A few of the makers have plenty of work, while others have several looms idle. Orders are rather scarce, and the tendency to refrain from ordering goods until they are actually required is becoming more pronounced. Spinners are not all well employed. Trade in wool is extremely quiet. Several of the linen firms at Kirkcaldy have been exceedingly dull, while one or two are busier than usual. Competition continues keen in all classes of goods. The same may be said about the floorcloth and linoleum industries. A busy time in this branch is anticipated, as a cargo of between 500 and 600 tons of cork for one firm has just been delivered at Kirkcaldy harbor. Other large shipments of cork are expected shortly for linoleum firms.

DUNDEE.—The Dundee jute trade cannot be said to have regained a satisfactory position. Nor are there any reliable signs of its doing so. While Hessians have gone back one-sixteenth in makers' transactions, the raw material is quoted by sellers for August-September delivery at £12 10s., and the lowest at which business has been done is £11 15s. for best marks. Buyers are, however, chary of anticipating the market, and there has been very little forward buying. Any attempts by manufacturers to raise prices for their goods have not yet succeeded, and it seems a necessity that prices for manufactured goods must increase if the prices now asked for raw material and for yarn by spinners are to be maintained. A Dundee correspondent writes: "When one reads of 70 tons of linen yarn arriving from the Continent in one week the explanation of the state of our market is simple enough. As has been shown in these columns over and over again, the spinners in protected countries ship their surplus the moment their own market does not take off their whole production. Thereupon the spinners here are face to face with, not a real competition, but with yarns sold much under cost. The French or Belgian spinner sells the bulk of his production at a profitable price by getting rid of his surplus here, and the unfortunate thing is that the price at which he sells his surplus in a weak market fixes the price of all yarn spun

fore. This is a result of free trade never foreseen, and which has reduced the value of flax mills in Scotland, and altogether put an end to any prospect of a further extension of the flax spinning trade.

BELFAST.—In the linen trade the demand, both on home and foreign account, is fairly up to the level of late business, though buying on all sides is being conducted on very cautious lines. Prices for piece goods are firm, with a hardening tendency; and for most classes of yarns there is a fair demand at full rates, with the exception of the medium numbers of line wets, which are difficult to dispose of in sufficient quantity to prevent an accumulation of stocks. Cotton goods have been very freely purchased in the local warehouses for some days past, owing to the issue of advanced price lists by some of the leading Lancashire manufacturers. Some of these have given their customers the opportunity of purchasing at old rates, an offer which has been largely availed of by the leading buyers, so far, at least, as they could foresee their requirements for some time to come. With these exceptions, the new prices are being firmly adhered to. The recent further advances in both cotton and yarns in the Manchester and Liverpool markets render a further advance in cloth unavoidable almost immediately. Fine goods for manufacturing and shipping purposes are a good deal inquired after, but the high prices quoted check business to a considerable extent. Buyers whose continued disbelief in the permanence of the advance has caused them to hold off from buying, are now paying dearly for their incredulity. The trade of the month just ended has been fairly satisfactory so far as the turnover of most classes of Irish woollens in the wholesale warehouses is concerned. The better qualities of chevots and saxonies are in steady request, and the growing demand for Irish worsteds still continues to increase. Donegal and Mayo homespuns are selling to a moderate extent, and are expected to go in very considerable quantities during the remainder of the season, both for men's suitings and for ladies' seaside costumes. The trade in Irish dress tweeds and costume cloths is making satisfactory headway both at home and at the principal trade centres across the channel. Some of the leading Irish makers have been most successful in hitting the public taste, especially of the more aristocratic section, both as regards texture and coloring, and a substantial trade in these and similar productions is generally looked for during the coming summer and autumn.

CHEMNITZ.—Reports from Chemnitz speak of trade as being good. Fleeced goods for years have not been bought in such quantities as this season, and prices are rather stiff in that class of goods. For deliveries earlier than July it is hard now to place orders. Maco feet seem to be growing in demand every season, and as in those the production is not as large as of plain black goods, the market is pretty well filled up with orders. Coarse-gauge goods are still high in price, and will not come down during the season, as the operatives have orders enough to keep their machines running full time. Ladies' hose at about 5 marks are called for a great deal, and buyers are searching the market for the best qualities at that price. Black is still leading, and for the autumn tans are bought less than for spring orders. Misses' ribbed hose in fleeced are also selling well, and this article has been improved considerably, and is showing now a nice silky fleecing, same as plain goods. Men's half hose, fleeced, have never been a very big selling article, and are only going in moderate quantities. In fine gauzes trade has also picked up again, as some good orders have been placed, and prices are stiffer than they were a few weeks ago. Fancy hosiery is slow, but will most likely be better again for the coming spring season. Trade in gloves is good now, and a large number of orders have been placed. Cashmere gloves with double woven finger tips are good sellers, and will give satisfaction to the consumer and the merchant. In gloves black is bought almost exclusively. Only in imitation Ringwoods and similar articles are fancies taken up.

ROUBAIX.—At Roubaix manufacturers report a rather better trade. Cloth has sold fairly well, as the splendid weather has given a fillip to the retail trade, which in many cases has almost exhausted its first season's supply. If the demand keeps on the same level it will be difficult presently to prevent a scarcity of material. One of

the novelties most in favor is called *La Parisienne*, a sort of silk armoire with woollen wets, which is made in all possible light and dark shades.

CREFELD.—The market is unchanged, and while a fair demand continues to make itself felt for summer goods, the looms are fairly under way in the manufacture of goods for next season. Velvet looms are busy filling orders for fall, and the production of velvet as well as of cloaking plushes is such as to indicate a good season. According to the report of the Chamber of Commerce, of Crefeld, the year 1894 has not been satisfactory for the silk and velvet manufacturing industries of that district. For the velvet industry the results obtained in 1894 are especially unsatisfactory. In 1894 the total value of the production of velvets and silk piece goods in the district was a little over 60,000,000 marks—more than 13,000,000 less than the value of the production of 1893, and nearly 5,000,000 marks less than in 1892. The year 1892 had been poor enough in results, but 1894 was still poorer, and the industry has to go back as far as 1878 to find a year in which results were as poor as in 1894. That the velvet industry has suffered relatively the most is shown by comparing the figures of production for the last few years. The value of the velvet output, which was 28,020,860 marks in 1891, 26,328,259 marks in 1892 and 32,677,908 marks in 1893, decreased to 22,546,400 marks in 1894. The decline in the demand for velvet by the United States is the principal cause of the decrease in the production of velvet in 1894 compared with 1893, the exports of velvets from the Crefeld district to all countries outside of Europe, and in which the United States are included, having declined from 11,565,328 marks in 1893 to 6,150,449 marks in 1894. The effect of the fluctuations of production on the welfare of the district, as reflected in the earnings of the working people from one year to another, is shown by the wages paid to the weavers. The amounts paid as figures to weavers only (not including winders, cutters, dyers, finishers, etc.) are given as follows: Velvet industry—1891, 4,053,624 marks; 1892, 3,298,348 marks; 1893, 4,519,189 marks; 1894, 2,733,387 marks. Piece silk industry—1891, 8,646,858 marks; 1892, 7,602,559 marks; 1893, 7,181,565 marks; 1894, 6,611,587 marks. These wages include wages paid for power looms as well as for hand looms. The year 1895, however, has been so far more satisfactory in results.

LITERARY NOTICES.

The June number of *The Canadian Magazine* is a very creditable one. E. A. Meredith, LL.D., has a well-written criticism of Gladstone's "Odes of Horace," not altogether complimentary to the G.O.M.'s translations. Capt. C. F. Winter, of Ottawa, discusses in his "Re-armament of the Militia," the relative merits of the Lee-Metford and Martini-Metford rifles. Thomas Hodgins, Q.C., discusses interesting records connected with the attempts made to secure parliamentary representation for Toronto University. A very able and most interesting article, illustrated by colored plates, is that of Arthur Harvey, F.R.S.C., on Constantine's "Hoc Signo Vincas," which the writer suggests owes its origin to a Sun-dog seen on the eve of battle. Strange, queer and most entertaining are Pythagorean Fancies, by H. Arthur. Amongst the illustrated articles are "Rome Revisited," beautifully illustrated by C. R. W. Biggar, Q.C., "Yuba Dam Trout," by A. M. R. Gordon. "Castle Frank, Toronto," by Rev. Henry Scadding, D.D., and "Portland, Maine, and its Environs," by Robert E. Noble. Mr. Stearns, "His Herbal," by Dr. Susanna P. Boyle, recalls the queer and curious ideas in medicine prevailing over a century ago.

Dockham's Textile Manufacturers' Directory of America has now reached its twenty-ninth year, and the edition for 1895 bears out the high character it has maintained for years as a work of reference for the textile trades of the United States. This edition makes a large volume of 656 pages, and gives a complete list of all the cotton, woollen, silk, jute, linen, and all other textile mills, giving the capacity of each mill in spindles and sets of cards, the nature of its products and the names of the selling agents. It also gives lists of the commission merchants and wholesale dealers of the United States and Canada. There are also valuable statistics of the trade, and a new feature of the work is the American tariff on textiles, and

a "Mortuary List," recording the deaths of prominent men in the American trade during the past year. Published by C. A. Dockham & Co., 131 Devonshire street, Boston.

In the June *Century*, Prof. Sloane's "Life of Napoleon Bonaparte" is continued, and the narrative is brought down to Napoleon's invasion of Egypt and the battle of the Nile. The average reader will regret that this great naval fight is passed over with less than half a column and that while so many illustrations are given of other scenes, not a single picture is given of this encounter. Only a portrait of Lord Nelson—reproduced from the picture in the National Gallery—is presented. It is to be hoped that the author will make up for this defect by a fuller treatment of the other sea fights that made these wars the most remarkable in the naval history of the world, and determined the career of the great Napoleon himself. This number of the *Century* contains a very good account of the new public library of which Boston is now so proud. "The New Old Testament" is the title of an instructive review of the light which is being thrown upon the Old Testament by the historians and language students whose work is styled "the higher criticism." This work the writer says shows more clearly than ever that the prophetic writings of the Bible "are to this day the storehouse of the highest and surest political wisdom," and that "when understood in their relation to contemporary events, they are living text-books of social ethics." So wide is their application to the needs of modern life, that with a few notes and comments in my passages might be reproduced as "tracts for the times" on almost any burning question of the day. This shows the marvelous range of the ethics of the Bible and its suitability, for the special conditions of every community from the old times when these books were contemporary publications down to the latest and most complex situations of modern life.

Property is the title of the latest barque launched on the sea of trade journalism. The editor and proprietor is Harry Bragg, of Montreal, who has had an extended experience in newspaper work, both in the editorial and business departments. The first number contain twelve pages, and is well patronized by advertisers. We wish Mr. Bragg every success in his new venture. The publishing office is 405½ Board of Trade Building, Montreal.

"Motley, or Verses Grave and Gay," is the title of a 172 page book of poems, by J. W. Bengough, just issued from the press of Wm. Briggs, Toronto. Everybody has enjoyed Mr. Bengough's rich humor and masterly caricatures in the pages of *Grip* and other papers, but comparatively few of those who have not heard him on the platform are aware of the versatility of his genius. He is a rare mimic, a charming singer, a good reciter, who can handle almost any brogue or dialect, and a fluent speaker, with thoughtful ideas on questions of the day. With all these talents and his remarkable gift for caricature, we have now to consider him as a poet, and everyone who buys and reads *Motley* will arise with the conviction that not many, if any, of all our Canadian poets have surpassed him in the elements of combined humor and pathos. His verses on "Columbus," "The Season of Gush," "Delsarte," "Killed at the Blow," the "War Cry," and the "Woodpile Test," are good examples of these qualities, and show the force of his nature. The book is a beautiful specimen of Canadian typography, and as it abounds with pretty marginal vignettes of prominent Canadian characters, as well as original sketches by Mr. Bengough, makes a very attractive gift book. We are not surprised that this book has already gone through its first edition.

PREPARING WOOL FOR MARKET.

T A Code, in the *Perth Courier*, gives the following hints on the care of sheep and the preparation of wool for the market: "As the wool season is now approaching, a few remarks on the subject of preparing the fleece for market, will no doubt be acceptable, more especially since the United States market has been made free to the product of the world, with which ours must enter into the competition. Like other products for the market wool should receive attention, both as to the kind the market demands and as to

its preparation. The way an article is handled has much to do with establishing the standard and securing the seller an increased price. The demand is for a combing wool, which is the natural product of our country, or rather that for which our climate is best adapted. With attention we should be able to produce this article with profit to the producer. In the first place sheep should receive care in feeding early in the season. If left out disease from cold and exposure follows and a cotted fleece is the result, together with more burrs added than otherwise would be. The fibre becomes coarse, and harsh, and void of the lustre it would have in the natural condition, and the usual deduction of one-third off fairly indicates the loss and difference in value. The fleece should be preserved unbroken, intact, as much so as possible, whether washed in the tub or on the sheep. The latter method is preferred by the writer, for reason that the fleece is more intact, and more convenient for sorting purposes. If this method is adopted, the fleece should not be allowed to remain on the sheep more than three days after washing; otherwise the oil comes back and defeats the object of washing; after clipping, the fleece should be dry; then roll, commencing at the neck, showing the inside out; tie with wool twisted at the end. It can then be inspected without opening. Do not tie with binder twine, as this is almost as bad as burrs; the vegetable fibre mixes with the wool, and is much dreaded by dyers, as it will not take the dye like the animal fibre, and besides may leave a flaw in the fabric when removed.

THE EXPORT OF SILK GOODS FROM JAPAN.

No trade has made such extraordinary strides as that of habutæ (silk goods) in the staple exports of Japan. It reached to a total amount of 1,000,000 yen in 1890, but in 1894 the total trade done amounted to 7,250,000 yen, the annual increase being nearly double. As the recent war attracted the attention of the American people towards Japan, and Japanese products find favor in the eyes of Americans, a still greater export of habutæ may be looked for. Nine-tenths of the product is supplied from Fukui prefecture. However, it was only in 1887 that the industry was started there, but the returns for that year are missing. The following are those from 1888 up to last year:—

			Yen.
1888	No. of Hiki, 21¼ yds	.....	7,145 53,624
1889	" "	.....	44,672 406,641
1890	" "	.....	87,224 748,190
1891	" "	.....	186,286 1,378,770
1892	" "	.....	414,415 2,838,914
1893	" "	.....	409,980 3,534,421
1894	" "	.....	571,993 5,076,127

Of the total export of 7,250,000 yen worth, the production of Fukui constituted 5,000,000 yen.

It was in 1875 that attention was turned toward the production of habutæ by the use of French looms. In succeeding years a number of hands went to it, until in 1885 or 1886 there were 200 looms established in Fukui city alone. But the manufacture of that city had been limited to umbrella material and handkerchief stuffs. With the greatly increased power of production the market soon became overstocked, the supply being above the demand, to the great concern of the manufacturers. So a number of weavers were invited from Kirin to instruct the Fukui weavers in the manufacture of habutæ. As French looms were in use the result was most successful, the apprentices learning their art in only three weeks. Since then the manufacture of habutæ has rapidly extended and become prosperous, as the industry is seen at present. There are about 12,000 girls at present employed in the industry, and they are paid 50 sen per hiki. The monthly manufacture of a girl averages from 4 to 11 hiki, but the general average is between 5 and 6 hiki. The girls are employed twelve hours per day with little variation, according to the condition of the market, but even when they are employed for night work, never for more than fourteen hours. Generally after a six months' training they become experts at the industry.

RECENT CANADIAN PATENTS.

OF INTEREST TO THE TEXTILE TRADES

J. Bannister, Mexico, Republic of Mexico, has patented an improved shuttle binder. The binder is in the form of a bell crank or lever, having limited travel. One arm of the binder is placed in the path of the shuttle, and the other in such a position that pressure on the first arm will cause it to press laterally against the shuttle.

The Waterloo Woolen Company, Waterloo, Ont., have patented a process for producing imitation Buffalo robes. The process consists in interweaving a face web having a worsted roving welt, together with an inner web having a carded woolen yarn welt. The material is then passed through a fulling machine, so as to shrink the inner web and produce on the face a series of loops of worsted roving. The loops are then combed, and the robe is finally submerged in hot and cold water, alternately, until the desired curl is imparted to its face.

The Montreal Cotton Company, Valleyfield, Que., have patented a machine for coating textile fabrics. The machine contains rollers through which a cooling fluid is circulated, so that during the operation of coating the parts of the fabric in contact with the rollers are being cooled and caused to sweat.

A. Morrison, Alpena, Mich., has invented a breaking and scutching machine for flax, etc. The machine comprises a breaking table provided with longitudinal slots. A carrier is arranged to hold and feed the material at right angles to the slots, and a roller moves transversely across the table.

G. Townsend, W. Armitage and H. Spencer, all of New Bedford, Mass., have patented a selvage protector for cotton machinery. The protector consists of a piece of metal provided with an inverted U-shaped notch at its under edge. The sliver allows of the machine being inserted between the adjacent parts of the drawing rolls.

J. Gold and A. Rudolph, both of Montreal, have patented a process for making waterproof garments. The garments consist of two layers of cloth or fabric united by an intermediate layer of thin rubber tissue which has been rendered adhesive by heat.

The Toronto Carpet Manufacturing Company, Toronto, have patented a carpet loom, having a special system of effecting a tension on the warp threads in the material being manufactured.

Patrick Bradley, Oakland, Cal., has patented a sewing machine needle threader, consisting of a block with a perforation adapted to coincide with the eye of the needle and direct the thread, an arm carrying the block at its lower end, a slotted plate fitted against the arm of the machine having its lower end connected by a hinge with the upper end of the arm, which carries the block, a screw projecting from the needle bar through a slot in the arm and through a slot in the plate, and a locking nut for adjustably securing this plate. Means are provided for maintaining the block elevated when not in use.

G. Geyer, Brooklyn, N.Y., has patented a machine for softening skins. In the receptacle in which the pelts are to be treated, there is a crank shaft, on which an actuating rod or bar is mounted, and a guide for this rod through which it may slide and vibrate at the same time. A foot is supported by the bar, which is movable longitudinally with it, and there is a spring to press the foot outwardly and to a proper extent.

C. E. Hallowell, Philadelphia, has patented a hook and eye fastening, in which the hook is formed from a single piece of wire, and comprises a shank portion consisting of two straight parallel members.

H. Davidson and A. C. Clapp, of New York, have patented a hook and eye fastening in which the hook is provided with a pair of opposite projecting stays, each formed of a wire bent into three almost parallel arms connected by curves, all lying in the same plane and arranged so as to self-fasten with the eye.

Chas. Kreuziger, Waterloo, Ont., has patented a washing machine.

John Laird and the Hope Street Factory, both of Belfast, Ireland, have patented a button-hole sewing machine, in which

there is a driving spindle rotating in the arm of the machine and adapted for operating the needle bar, this spindle being provided with a switch cam in combination with a main lever engaged with it. There is a sliding bar arranged below the bed plate and reciprocating by the main lever. The bar engages elastically with the cloth plate. Means are provided for automatically shortening the stroke of the cloth plate while the button-hole is stitched along the two sides, in order to give the full stroke while the barring stitches are made.

Addison Conkling, Plainfield, N. J., has patented a spool for thread, the bore of which is provided with a wind sound-producing device made either in the form of a whistle, or of a reed sound-producing device or trumpet.

C. A. Hill, Worcester, Mass., has patented a sewing machine of which the component parts are two needle-bars, a take-up, a reciprocating device for operating these bars, means for disconnecting one of the needle-bars from the operating device, movable tension device, and connections between it and the disconnecting mechanism whereby the tension device is lifted or moved toward the take-up when the needle-bar is thrown out of operation by the disconnecting mechanism.

Charles Terrot, Camstadt, Germany, has patented a knitting machine in which there is a splicing thread device possessed of jaws adapted to grasp and cut the splicing thread between the thread guide and the needles, and hold the end of the splicing-thread until it is ready to be again put in contact with the needles.

H. Treichler, Zurich, Switzerland, has patented a method of washing and rinsing fabrics and other washable objects, whereby the washing liquid is forced under pressure in the form of jets on the objects treated, which are at the same time subjected to a reciprocating motion, the liquid being at once conducted away from the articles treated, in order to afford, in addition to the chemical action of the liquid, a mechanical action of the strong jets. An apparatus for carrying out this method is also patented.

NEW SHADES FOR 1895

The Farbenfabriken, vormals F. Bayer & Co., Elberfeld, have just published a new pattern card of fashion shades on ladies' cloth for the season 1895. The book contains 162 patterns, taken from the Parisian fashions, and are the newest and latest. The shades are obtained in one bath, with the aniline specialties manufactured by the above firm, and this card should be of service to dyers for matching shades and obtaining new tints.

The Dominion Dyewood and Chemical Co. are sole agents for Canada, and will mail these cards on application.

J. F. CARVER, a well-known dry goods merchant of Windsor, Ont., was drowned at Stillwater, N.S., while boating recently.

THE estate of W. V. H. Stanford, dry goods merchant, Arnprior, Ont., has paid a dividend of 29 cents on the dollar. The liabilities were \$33,094.

HALIFAX is soon to have a wholesale dry goods house, the members of the firm being H. J. Wellner, F. W. Moore and G. W. Partridge. They will devote themselves to millinery and fancy dry goods.

T. DOLAN & Co., for twenty years in the dry goods and clothing trade in Peterboro, have assigned. About ten years ago Mr. Dolan was worth \$20,000, but he lost it again and in 1892 was obliged to mortgage his stock for \$7,000.

WE understand that R. B. Hutchison and R. A. Nisbet, who have retired from the firm of Hutchison, Dignum and Nisbet, will during the present month join Alex. Auld, buyer for W. R. Brock & Co., in opening a wholesale dry goods business in Toronto on their own account, making a specialty of Canadian woolsens. This is the second new wholesale house started in Toronto within three months devoted to Canadian goods—a circumstance which seems to bear out the arguments used in this journal, that those wholesalers who have treated Canadian goods with studied neglect have done so to their own ultimate injury.

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WOOLEN AND WORSTED YARNS

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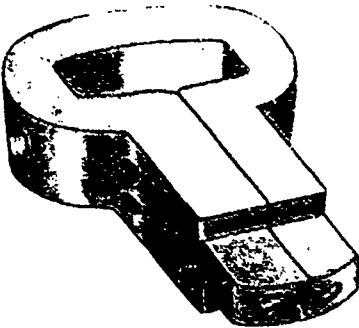
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Steel Ring Burring Machines a Specialty.

Among the Mills

Work is proceeding on the new woollen factory at Dunnville, Ont.

The Port Dover knitting mill is running overtime in one department.

It is now reported that the rubber works at Port Dalhousie will move to Toronto.

B. A. Booth, of the Odessa, Ont., woollen mills, recently called a meeting of his creditors.

There is a report that the St. Catharines Carpet Co. will move their factory to Tilsonburg.

John Calvert, foreman of the Cuelph, Ont., woollen mills, has recovered from his recent serious illness.

The woolstock, shoddy and flocks mills at Doon, Ont., were sold a few days ago to E. Perine for \$7,000.

Mr. Wilson, superintendent of the Kingston Cotton Mill, is in weak health, and will probably retire to England to live.

The woollen mills at Moncton, N.B., owned by J. H. Humphrey & Sons, were recently damaged by fire to the extent of \$500.

By the end of next month the binder twine factory at the Kingston Penitentiary will have six hundred tons of twine ready for the market.

Seven car loads of raw silk from China were recently sent over the C.P.R. from Vancouver to New York. It is valued at \$1,000,000.

J. Matheson & Sons, of Waugh's River, N.S., have fitted up their woollen mills with improved machinery, and will go extensively into the cloth and yarn business.

In 1878 Canada imported 4,608,000 pounds of foreign wool, in 1893 the imports were 10,503,000 pounds, last year they were 7,156,000, as trade was seriously diminished.

The Sarnia, Ont., woollen mills, which have been closed down since the failure of Smith Bros., are again in operation under the management of J. Newton, of Limehouse.

The McKay Woollen Mills, Charlotte town, P.E.I., have made extensive improvements in their premises. The company recently bought out the business of C. J. Paton & Co.

G. Beringer, a youth employed in the Waterloo, Ont., woollen mills, was caught in one of the machines a few days ago, and had his left arm broken in three places below the elbow.

A circular has been issued by the Montreal Cotton Company, advising its customers that the company does not bind itself to accept orders for future delivery at present prices.

Rocklin woollen mill, at Middle River, N.S., is running steadily, Kerr Brothers, the proprietors, having secured a large contract for woollen goods in Antigonish. A new loom is being set up.

Large shipments of cotton are being made just now by the St. Croix cotton mill, Milltown, N.B. One day's shipment consisted of about 250,000 yards consigned to Kingston, Hamilton and Toronto, Ont.

A few days ago Octavien Verville, aged 31 years, employed in one of the Montreal cotton mills, had his right eye pierced by one of the spindles flying out of the spinning mule, completely destroying his sight.

A carpet manufacturer visited Mitchell, Ont., recently and asked the town council to grant him a bonus of \$1,400 to pay for moving his establishment from St. Catharines to Mitchell. His request was not granted.

The Waterloo Knitting Company, Waterloo, Que., recently organized as a private concern, will make considerable improvements in the works. A Galt, Ont., firm has an order from them for a 100-horse power engine and boiler, new cards, with Barker rub rools, two new mules and two new knitting frames, the entire cost of which will be in the vicinity of \$8,000.

The flax mill of J. & J. Livingston at Tavistock, Ont., was totally destroyed by fire a few days ago. The fire is said to be the work of an incendiary. No insurance. The amount of loss is \$1,500.

The Gutta Percha and Rubber Mfg. Co. of Toronto have had the greatest season on record in rubber hose, both for fire and garden purposes. Their facilities have been pressed to their utmost to overtake orders.

Perth, Ont., has passed a by-law exempting from municipal rates and taxation (school rates excepted) the woollen factory of R. Gemmell & Son. This was in accordance with the original agreement between the factory and the town.

The employees of the Galt, Ont., Knitting Co. recently made a presentation of a handsome gold-headed cane to their late fellow-employee Robert Murray, who has left Galt to take up his residence in Aberdeen, Scotland. In addition to the cane, a laudatory address was read on behalf of the employees.

The shaft of the power engine in Ferguson & Patterson's woollen mill at Preston broke recently, and one portion of it drove a hole into the cylinder of the engine, completely disabling it. The employees were badly frightened. The mill was obliged to cease work for several days to allow of repairs.

Seventy-five weavers employed in Park's cotton mill at St. John, N.B., went on strike a few days ago. They demanded a ten per cent. advance of wages. The mill was closed several days, but the men eventually returned to work at their old wages. W. Parks & Son utilized the time the men were on strike in having the machinery overhauled and improved.

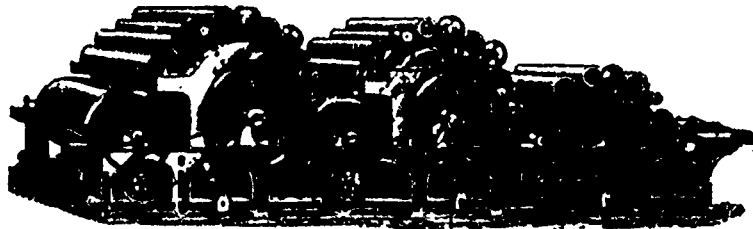
One of the gentlemen appointed to investigate the affairs of the Consumers' Cordage Company, stated that the report has been made, but will not become public until the return from England of one of the directors. It is known, however, that the report is far from a rosy one, as it shows terrible mal-administration to say the least.—*Trade Bulletin*.

James Jackson, general manager of the Dominion Cotton Mills Co., has gone to England with James Dolphin, superintendent of the Magog branch. Both gentlemen will visit the cotton manufacturing centres of Great Britain, and will adopt any improvements that may seem to them to be of advantage to the Canadian mills. They will be absent about two months.

A paragraph has been going the rounds of the press regarding a proposition made to Strathroy to start a carpet factory there, but no names were mentioned. We learn that the promoter of this scheme is Stephen Syer, to whose peculiar diplomacy may be largely attributed the recent troubles of the carpet concerns of St. Catharines. After looking into the question somewhat, the town council of Strathroy have wisely decided to have nothing to do with the scheme.

The *Hamilton Herald*, in its recent special trade issue has a sketch of the firm of Long & Bisby, wool dealers in that city. "It was in 1867 that Long & Bisby succeeded A. L. Woodruff, who established the first wool house in Canada. The old house was formerly located on James street, but in 1868 Long & Bisby moved to Macnab street. In 1893, the firm moved into their present spacious and elegant brick building in John street, which is in dimensions 70 x 200 feet, containing three floors and basement. This gives them a storage capacity of 56,000 square feet of floor space. Long & Bisby are wool dealers and commission merchants in foreign and domestic wools and cottons. Their trade is by no means confined to the narrow limits of Canada. They now receive consignments of wool from all parts of the civilized world, while the bulk of their shipments are now to the United States. G. H. Bisby and William Dubart Long, who own this establishment, are gentlemen of unimpeachable character. They are largely interested in the manufacture of knit goods, and are heavy stockholders in Canadian mills. They are also interested in the Farr Alpaca Company, of Holyoke, Mass., which factory removed there from Hespeler in 1873. In fact, Long & Bisby are among the original stockholders of the company."

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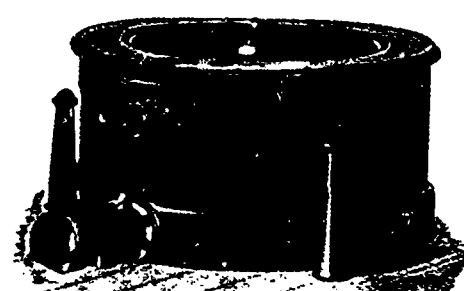
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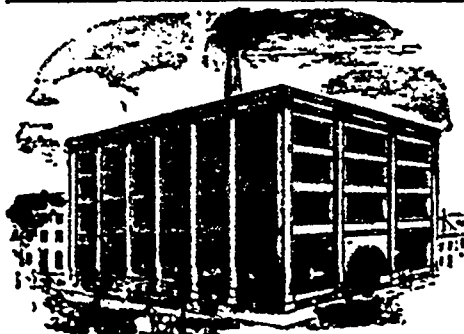
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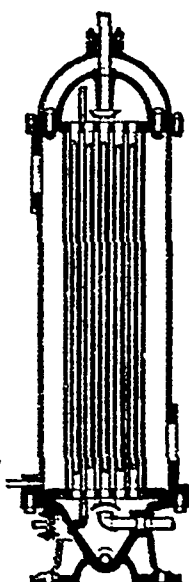
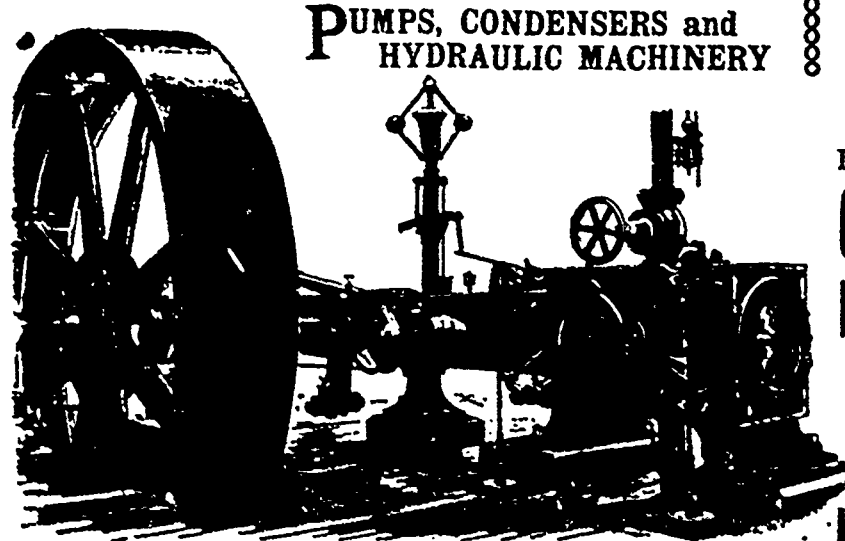
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High-Pressure, Condensing
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HEAVY FLY-WHEELS a Specialty



The Bowmanville correspondent of the Oshawa *Vindicator* says: "Our carpet factory has come and gone. Factories looking for soft snags need not strike this burg. Anyone wishing to start here will be encouraged to a large extent, but they will have to make some show for it, as no skin game will be entertained for a moment."

It is understood that the late Robert Forbes, of the R Forbes Co., worsted manufacturers, of Hespeler, in his will left the following legacies for charitable and religious purposes: To the Guelph General Hospital, \$1,000, to the Galt Hospital, \$500; to the Home Mission Committee of the Presbyterian Church, \$2,500; to the Foreign Miss. on Committee of the same church, \$2,500; to the Aged and Infirm Ministers' Fund of the same church, \$2,500, and also to the same church for French Evangelization, \$1,000

The woolen mill at Alliston, Ont., operated by Fisher & Rogers, was destroyed by fire on 31st May. The fire broke out in the morning about daylight, and in spite of the efforts of the fire brigade the establishment was wiped out. It is reported that there was a large stock of manufactured goods and raw material on hand at the time of the fire. The place was well insured, there being in all about \$20,000 on the plant and stock. Of this \$16,000 was on the stock, on which \$12,000 has been recovered. The fire is attributed by the proprietors to incendiarism. The mill employed fifteen to twenty hands. The proprietors contemplate rebuilding.

A Buffalo, N.Y., despatch states that the Livingston Brothers, of Baden, Ont., propose to build a large linen and fine cordage factory in that city. They are the largest flax growers in Canada, owning several farms in Western Ontario, the flax product of which is manufactured into linen and cordage. They have for years past been selling the bulk of their product in the States, and they now propose to manufacture in the country where they find the biggest market for their goods. Their agent has inspected various factory sites, and forwarded to Livingston Brothers a report. Jas. Livingston, the senior partner in the firm, will visit Buffalo at an early date, to look over the sites mentioned. It is stated, says the same report, that the net profit made by the Livingstons last season reached \$125,000

The prediction made by our correspondent "Woolen Manufacturer" last month, regarding the Weston Woolen Manufacturing Co., seems pretty certain to be verified. The unmanufactured stock has been sold off by Mr. Clarkson, the assignee, but has not realized enough to pay the wages due the employees, a number of whom are now joining to bring suit against the directors personally, for the recovery of their wages. The bulk of the manufactured stock was hypothecated under warehouse receipts some time ago, and at the time of the assignment there was practically no

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stock of goods left in hand. The ordinary trade creditors will get nothing. As a large part of the machinery is antiquated, it is regarded as extremely doubtful if the concern can be reorganized. It is probable that the plant will be sold off for what it will bring and the business closed out.

In the death of Wm. Hobbs, in Montreal, last month, a figure of some prominence in the history of Canadian textiles was removed. The late Mr. Hobbs came from England in 1851, and for a number of years was actively engaged in the dry goods business in Montreal. Later on, however, he was offered and accepted the Canadian agency for the Lancashire Insurance Company, which he managed successfully for several years. About eighteen years ago Mr. Hobbs became identified with the cotton industry, and was mainly instrumental in the erection of the mills at Valleyfield, Coaticook and Magog. He was the promoter of the first print goods factory in Canada, and operated by the Dominion Cotton Mills Co. at Magog. Latterly the condition of his health again assumed a serious aspect. Mr. Hobbs was at one time one of the most enterprising and promising merchants of this city, and, in his daily intercourse with those with whom his business and social relations brought him into contact, showed many warm and genial characteristics. Lately he carried on business as a commission agent in dry goods, representing the Horrocks among other companies.

CHEMICALS AND DYESTUFFS.

The demand for chemicals and dyestuffs still continues good. Prices are rather firmer all round. Gambier is strong at 6¼ to 6½c. Glycerine is higher, 13½ to 14c. being now asked. Sulphate of copper is steady at \$3.75 to \$4 for round lots. Sumac is not quotably higher. The following are current quotations in Montreal:

Bleaching powder..	\$ 2 15	to \$ 2 30
Bicarb soda.....	2 25	" 2 35
Sal soda	0 65	" 0 70
Carbolic acid, 1 lb. bottles	0 25	" 0 30
Caustic soda, 60°	1 90	" 2 00
Caustic soda, 70°	2 25	" 2 35
Chlorate of potash.....	0 15	" 0 20
Alum	1 40	" 1 50
Coppers	0 70	" 0 75
Sulphur flour	1 50	" 1 75
Sulphur roll	1 50	" 1 75
Sulphate of copper	3 75	" 4 00
White sugar of lead	0 07½	" 0 08½
Bich potash	0 10	" 0 12
Sumac, Sicily, per ton	65 00	" 70 00
Soda ash, 48° to 58°	1 25	" 1 50
Chip logwood	2 00	" 2 10
Castor oil.....	0 06½	" 0 07
Cocanut oil	0 06½	" 0 07
Gambier	0 06¼	" 0 06½
Glycerine	0 13½	" 0 14

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Chemicals and Dyestuffs

ANILINE COLORS OF EVERY KIND

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

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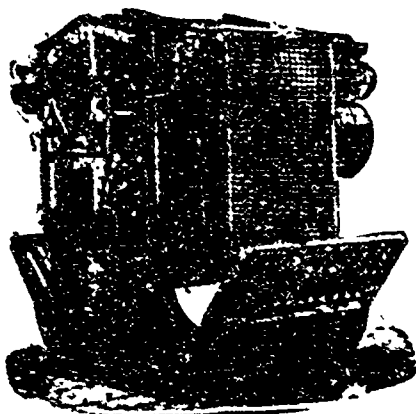
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Spools, Pat Double
Acting Gigs, etc., etc.

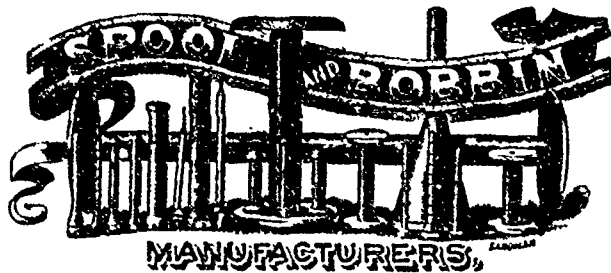


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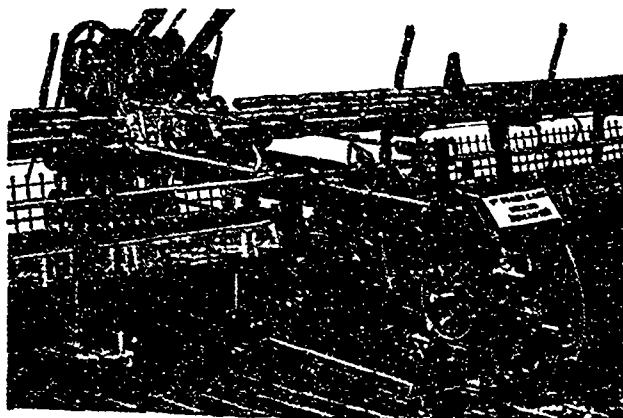
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Machines, and other Woolen Machinery.

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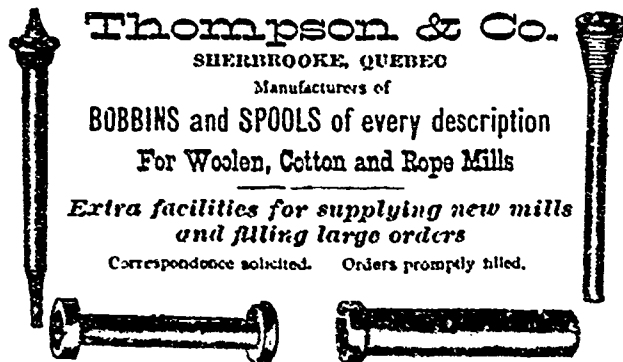
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 Best prices paid for Wool Pickings, Woolen
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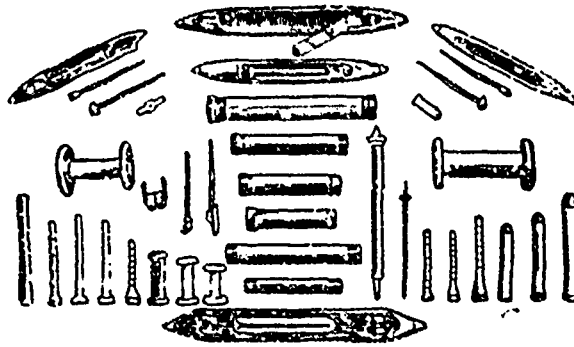
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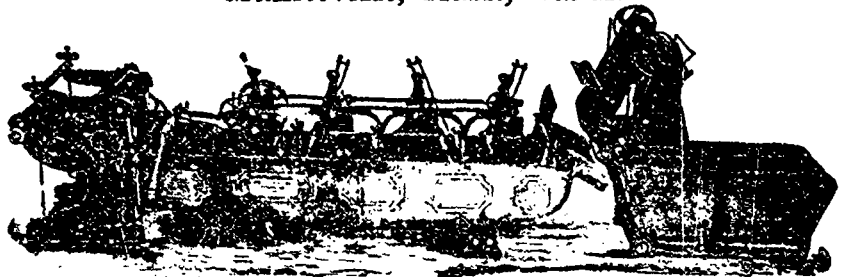
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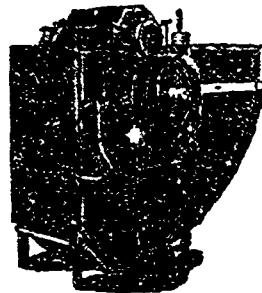


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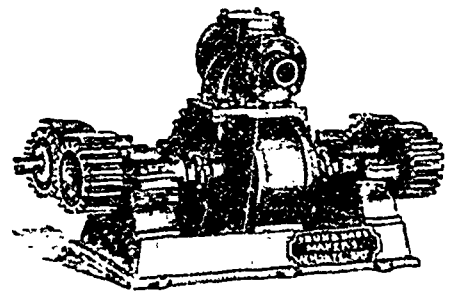
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LOWELL, MASS.

THE WOOL TRADE.

The chief excitement in the Canadian wool trade during the past month appears to have centred in Toronto, where the leading buyers are described as tumbling over one another in order to prevent each other from getting any parcels that show up. This applies more particularly to the city markets, but the contagion seems to have extended to various local markets throughout western Ontario, where the idea seems to have got abroad that American agents will be on hand. There appears to be very little reason for this excitement, for while in England prices in general are only on a level with those of last year—with no indication of native English wools advancing—the market reports to hand from the States during the last three weeks do not show any marked tendency upwards. The *Boston Journal of Commerce* predicts lower prices, while the *American Wool Reporter* says prices are firm, with large transactions. This, however, is qualified by the fact that American woolen manufacturers, while very busy, are satisfying their needs as far as they can with foreign wools rather than American. Some western American wools are still coming into Canada, a Toronto knitting firm having bought several thousand pounds more during the past month. The fact is that since the era of free wool in the States the Americans have seen the advantage of being able to select from any quarter of the world the exact grade they wish for each special line of goods. A greater variety of foreign wools has been imported there and some grades of native growth, being in poorer demand at home, have come in for the needs of certain manufacturers in Canada.

Regarding the market for Canadian wools in the States, the Philadelphia correspondent of an American paper writes: "There is so much fine foreign wool available that dealers are not likely to show so much eagerness in taking up fine Ohio wools this year unless they can purchase at what they consider a safe price. The bulk of the fine washed fleeces will not be available much before the first or middle of July, and any price named would be largely nominal. Advice received from Canadian growers state that the fact that they were fortunate this last season in selling off their two years' surplus has caused them this season to become very firm in their ideas of values for their wool; to such we would say, do not forget that the situation has very materially changed since you disposed of your old wool. At that time American manufacturers needed your wool to piece out with. To day they have ample supplies of foreign wool to draw from, and while the quality may not in all cases be equal to the domestic and Canadian-grown wool, it will do for a substitute at a price which will enable manufacturers to make a lower priced line of goods, which are constantly growing in demand among the masses of the people, as the era of low prices has come to remain for some time to come. A larger quantity at a small profit will be the only way the manufacturer will be enabled to succeed, as he is obliged to meet, each season, his foreign competitor, who is straining every nerve to produce new lines to compete with the American."

The leading wool dealers of Toronto report that the quality of this year's clip is perceptibly better than last, owing chiefly to the drier weather, while the quantity marketed to date, and in sight, is larger. There appears to be an increasing growth of Shropshire sheep during the last two or three years in Ontario. Prices quoted in Toronto are: fleece combing 20c., Southdown 21c., rejects 15 to 10c., unwashed 12c.

The Montreal wool market has been very quiet during the last month, and as yet there is no sign of improvement. Stocks in Montreal are very light, being as yet lighter than they were last month. The Canadian wools of the new clip, which are now in the market, seem to have made but small difference in the volume of business done. Cape grossies are quoted at 13 to 16c.; B A. scoured, 25 to 32c.; North-West, 11 to 12c.; B C, 9 to 11c. There has been very little fluctuation in the price of wools, and the above quotations are the same as they were last month. The June-July series of colonial wool sales will open in London on the 2nd July. About 400,000 bales will be offered at this series.

The following prices are of new clip wool as quoted at various local markets in June —

Bothwell	18	to	21c.
Hamilton .....	..	to	18c.
Owen Sound.....	16	to	17c.
Meaford.....	16	to	17c.
" (unwashed) ..	10	to	13c.
Renfrew.....	17	to	20c.
St. Catharines, Ont. (fine).....	25	to	30c.
Belleville ....	..	to	17c.
Peterborough	16	to	17c.
" (Southdown) .....	..	to	20c.
Orillia (washed)	16	to	18c.
" (unwashed)	10	to	12c.
Aylmer	18	to	20c.
Perth	16	to	19c.
Listowel.....	18	to	21c.
Pembroke .....	..	to	18c.

A report of the last series of colonial wool sales in London says: "At the commencement of the sales a spiritless competition soon reduced the standard of prices fully five per cent. on those of the previous series, a result largely attributable to a lack of support from French and German buyers. Towards the close a better spirit was shown, and the sale closed firm, with an upward tendency for nearly all descriptions. Even now prices have not reached the level of March sales, except for a few kinds of wools, especially those possessing lustrous properties. Taking account of the Australian wool shipped direct to this country and offered at the sales, up to the present time the quantity on hand is on a level with last year. The home consumption has been about the same as in 1894. The Continent has taken 80,000 bales less, but America has more than doubled her takings. English wool is quiet, although some of the newly-clipped Irish is beginning to arrive in prime condition. In lustre wools there is up to now little indication of prices advancing, following the lead of mohair, in which there is still considerable excitement. Prices paid at the sources of supply are quite out of the reach of this market's rates."

STYLES IN MEN'S CLOTHING.

With regard to new English styles in men's clothing the *Warehouseman and Draper* says:

In the general production of boys' clothing preponderance may be said to have been given this season to the Norfolk suit and other pleated goods of that ilk. This may be said to be a feature coeval with the introduction of chevots, serges, and other rough makes. Materials, indeed, have almost been too abundant for the wholesale clothier to select from—in Scotch heather mixtures, terra cotta, slate, lavender, and other blends of both chevots and serges, so that the designer of juveniles has been somewhat puzzled to bring out enough novelties in so stereotyped a style as the Norfolk to utilize all his stock of materials. Still this dress smacks so much of "torrent, fen, and moor" that the average English mother, who loves to see her boys happy and free, prefers the loose attire to any other. We may notice also that nearly all these goods are being made with elastic bottoms to the knickers, in order to still further plagiarize the sportsman and the man of leisure. But, though the Norfolk suit is the leading style in juvenile clothing, other pleated varieties are well to the front, and here again the rougher makes of cloth have been largely used. Still the solid products of the looms of Golcar, Longwood, and the neighborhood of Leeds and Dewsbury, have all, more or less, been brought into requisition for the many pretty novelties introduced in this and other styles of boys' suits, as well as the braided goods which have still some hold in certain districts. In larger sizes, worn with knicker trousers, the Windsor or Cambridge suit, worn of course with three garments, has this season an important place. In this style also the harder makes have been largely made up, and black worsteds, generally with bound jackets, have received some attention.

In youths' suits the run has been upon small, neat designs of tweeds, serges and chevots, whilst worsteds, vicunas and curl cloths have gone largely into consumption, especially for London and the Midlands. In connection with these latter makes, one may

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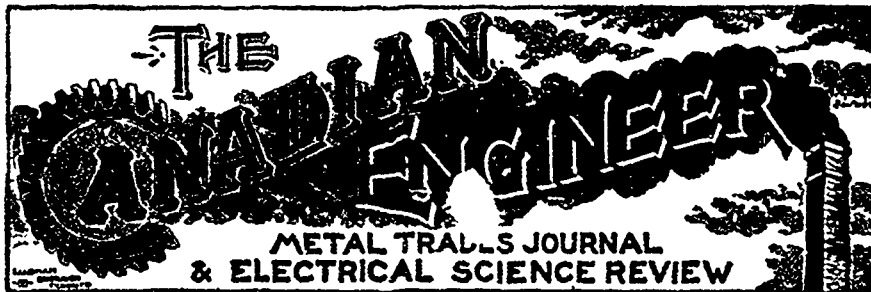
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The success of the *Canadian Engineer* has been unprecedented in the history of trade journalism in Canada, for not only was it encouraged and assisted from the start by able Canadian writers in the various branches of engineering, but it achieved what was still harder to accomplish—a sound financial position within the first year of its existence. The number of subscriptions received, and the number of firms who have sought the use of its advertising pages, have justified the publishers in twice enlarging the paper in its first year, and preparations are now being made for a further enlargement. It is hoped, by this increase, to make it twice its original size. While this will mean a large growth in advertising patronage, it will also mean a greater variety of reading matter and illustrations for our subscribers.

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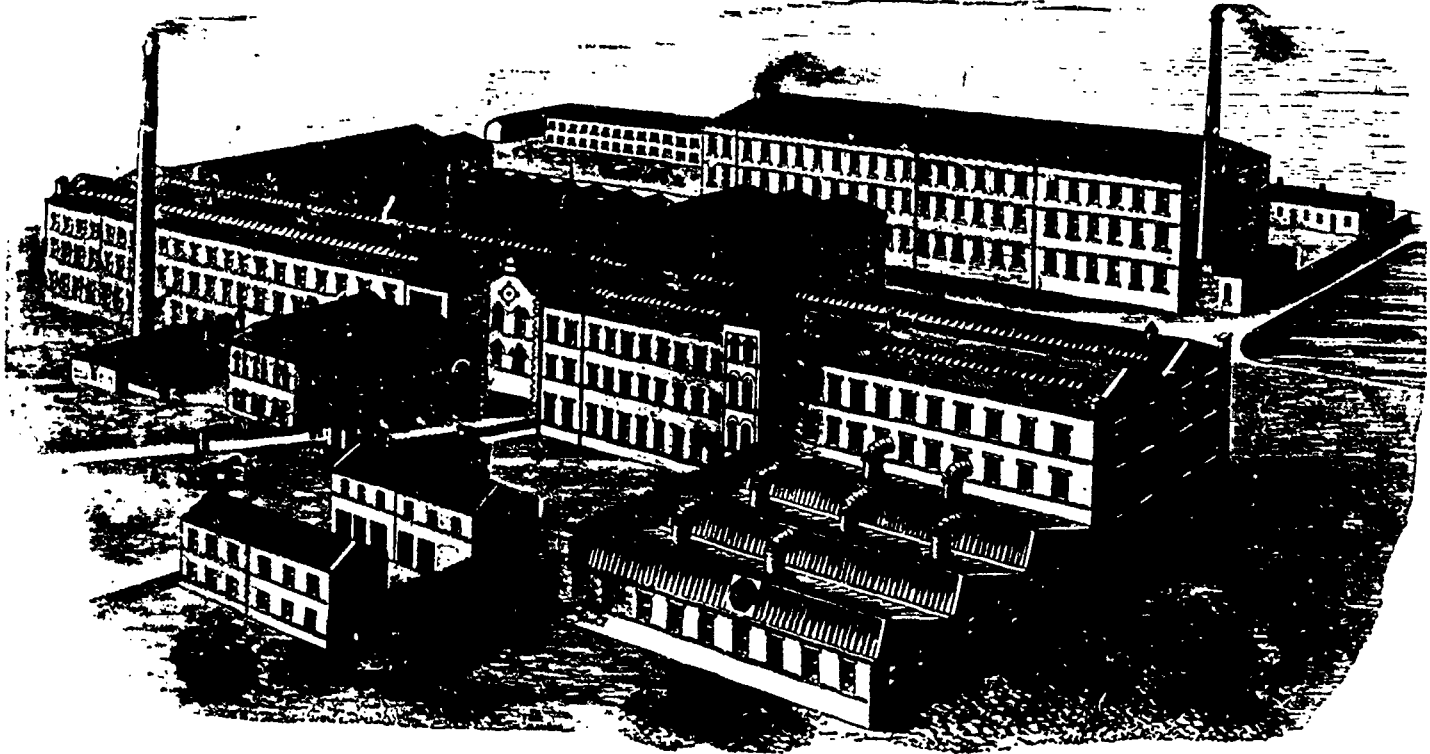
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observe that the use of beading braids for binding the coats, for both youths' and men's wear, has been a prevailing feature this season. Some black vicunas and kyle cloths, treated thus, have been worked up into very smart men's roofer coats at quite exceptional prices.

On the whole we have no other special feature to notice this spring in regard to men's clothing. In colored tweeds, chevots and serges the run has not been confined to any special make, although loose spun goods have perhaps still taken the lead. Some new and very pretty effects have been produced in prints, which have created some opening for them in various trades. In checks, principally of the broken up type, some very bright colorings have been on offer, and have found a ready market, especially amongst the workmen of the iron and coal districts. Stripes have not been having quite such a run as formerly in trousers, although anything striking always finds a ready market. Black and colored worsteds still take a back seat for men's suits, but opinions differ as to the future of this once great department of industry. There are reasonable grounds for believing that there may yet be some revival in the manufacture of harder-spun makes, when the markets of the world assume a steadier and more buoyant attitude.

STRENGTH OF SOME VEGETABLE FIBRES.

Perhaps the strongest vegetable fibre that is known, says the *Indian Textile Journal*, is that of the gigantic swallow wort (*Calotropis gigantea*), Madar of Bengal or Yercum of the Madras Presidency. It is a plant too common and too well known to require a special description. It is seen growing on sandy, stony, poor and waste lands, on the roadsides, old walls, ramparts, ditches and every piece of ground where it is permitted to grow, and not only is it viewed as a useless plant, but it is everywhere cut down when the land is required for cultivation. It is also met with in rich soil, such as the ridges and corners of paddy fields, where it grows to a great size and luxuriant appearance.

Although the different products of this wild shrub can be put to various economic uses, yet no method has been discovered to work them cheaply. The inner bark of the stems, which is the source of the fibre, is known as the bow string hemp of India, and is employed as a material for cordage-making, but at a later period it could be possibly employed even for weaving cloth. In a comparison made between madar and other fibres with a three-strand 3/4 inch rope, the following results were obtained:—

Cocus Nucifera (capable of sustaining) lbs.	224
Hibiscus Cannabirus " "	290
Sasnevieria Zeylanica " "	316
Gossypium Herbaceum " "	346
Agave Americana " "	362
Crotolaria Juncea " "	467
Colotropis Gigantea " "	552

It also yields a mami termed *Madar-ka-shak-kar*. The dried milky juice which exudes from the plant can be prepared like caoutchouc and gutta-percha, the silky down contained in the pods is suitable for stuffing pillows, couches, etc., is made into paper, and is also capable of being spun into the finest yarn, from which can be woven a description of flannel-like cloth.

One striking advantage relative to this plant, should it become a subject of future interest to the manufacturer, is that all waste lands could be well utilized for its growth, as it requires no particular soil. It is indeed questionable if there is another plant in India that would grow with less trouble, not to dignify it with the term of cultivation.

After being planted out it would require no further attention. It can be propagated by cuttings or roots; or by the seed, as it so plentifully propagates itself. It would almost seem indestructible, for nothing but rooting it out will destroy it. Within a week after being cut down it is seen growing up again, and if undisturbed for two months will be as strong as at first, bearing both blossoms and fruit. From what we have been able to observe of this plant, we are inclined to believe that it would thus grow to maturity four times during the year, were it as frequently cut down. This may

have a bearing also upon its value, as regards the bark for its fibres, which, as has already been said, is used for cordage.

These remarks may afford, for the moment, data upon which to form some idea as to its growth and productiveness, utility of cultivation and cost of produce, compared with cotton. This is a wild plant which does not look for moisture; cotton requires a good soil and irrigation. Hence it might be profitably introduced as an adjunct to cotton.

GEORGE PETIT is opening a clothing and men's furnishings store at Kaslo, B.C.

C. E. STEVENSON & Co., dry goods, Nanaimo, have opened a branch store at Wellington, B.C.

WILLIAM THOMAS & Co., wholesale furriers, Montreal, were burnt out on May 26. Loss, \$20,000, fully insured.

THE new company of Carsley, Sons & Co., Montreal, formerly S. Carsley, are seeking incorporation, with a capital of \$600,000.

THE firm of Taylor & Green, the largest dry goods and tailoring establishment in Gananoque, Ont., has dissolved partnership.

THE estate of the Toronto Fänge and Tassel Company has yielded a dividend of 4 1/2 cents on the dollar, on liabilities of \$16,820.

ADVICES from the East state that cotton worms have caused sad havoc in the province of Delta, Egypt, and it is feared that the yield of cotton in Egypt will be seriously affected.

THOS. DUNNETT & Co., wholesale furriers, of Toronto, whose place was recently burnt, are retiring from business, the stock being bought by Philip Jamieson, at 67 cents on the dollar.

A HUNTER named Curry has started a beaver farm on Geneva Lake, near Cartier, on the C.P.R. He has now 27 beavers, and they are apparently thriving under his care.

THE firm of Hutchison, Dignum & Nisbet, wholesale dry goods, Toronto, has been dissolved, and the business is being continued by E. J. Dignum alone, under the style of E. J. Dignum & Co.

THE course of study prescribed in the ordinary business college is a very limited one and little calculated to fit a pupil for the requirements of actual business life. A Toronto school, the Central Business College, incorporated within their curriculum last September the science of Political Economy, and during the year the students of this school have devoted several hours each week to this important subject. One of the questions on the last examination was, "Trace the history of the Canadian cotton goods industry," and several creditable answers were received.

IN the case of the Canadian Fibre Chamois Co. vs. Carsley, Judge Taschereau, of Montreal, has granted an interim injunction restraining the defendant from selling as "fibre chamois," "fiberine," or "fiberine interlining," any article not made by the plaintiffs. The defence rested on the laws of the Province of Quebec, under which he contended that no injunction could be granted. His Honor held that under the law of the Province, the courts had the inherent power to grant an injunction pending a suit, which might alter the position of the parties. He therefore granted the injunction.

THE Manchester, Eng., correspondent of the *American Carpet and Upholstery Trade* writes. Buyers for Dominion houses have been operating very cautiously for some time past, and many who usually stay here over six weeks have sailed homeward within a fortnight from landing. Here, in Manchester, we see more of the Canada trade than any other centre in Europe, and it has been painfully noticeable of late that British North America is not in a buying mood. Business with Newfoundland is almost at a standstill. The statement was made to the writer recently by the shipping manager for one of the largest dry goods houses in the city, that \$35,000 in cash would have saved the colony from bankruptcy just before the crisis. It was not forthcoming, and Newfoundland was brought upon her knees in a manner which has thoroughly exposed the rottenness of local financial methods.

BLACK bath ribbon is in such demand in London that the drapers find it almost impossible to secure a sufficient quantity

F. M. COWPERTHWAIT and C. C. Gray, of Montreal, have registered a partnership under the name of the Canadian Fibre Chamols Company

WALTER BLUM, of Sherbrooke, Que., is erecting the new building for his wholesale clothing stores recently referred to in this journal. The building will be 102 feet long by 50 feet wide

GEO. W. MOSS, of Montreal, well known in the thread business throughout Canada, died last month. He had retired from business four or five years ago. He was a man of high character in business

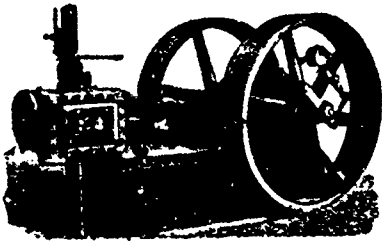
MACFARLANE & PATERSON, Montreal, manufacturers of suspenders and dealers in gents' furnishings, have assigned at the demand of Wm. Donahue. The direct liabilities are about \$25,000, and indirect \$30,000.

MRS. VERMILYEA, corset manufacturer, formerly of Toronto and Belleville, who was recently in trouble with the customs authorities of Toledo, Ohio, on a charge of smuggling corsets from Canada, has been released. The charge was attributed to spite, as the complainant was a girl who had been discharged from Mrs. Vermilyea's employ.

The surveying party engaged in locating the line of the Winnipeg and Great Northern Railway, came across a remarkable beaver dam some distance north of Gladstone, a few days ago. It

extends across a slight depression and is fully 1,000 feet long, and from four to five feet wide at the top, with sloping sides. The dam is built of chips, sticks, stones, clay, etc., and the work so cleverly executed that it seems incredible that it could have been done by animals. A skillful engineer could not have planned the work better, and modern mechanics could not build a more substantial structure. It is evidently very old, but has withstood the ravages of time with almost as much resistance as if it were a solid wall of rock. The dam, at one time, must have held back quite a large body of water.

The death last month of Arthur Thompson, son of Thomas Thompson, the well known clothier and dry goods dealer of Toronto, was a very tragic event. Two weeks before his end his wife left him because he had several times attempted suicide by taking doses of poison which had produced unconsciousness. These followed sudden outbursts of anger. At noon on the day of his death he went to his old home, accompanied by one of his employees named Edwards. They were received by his wife. He suddenly went upstairs and returned gasping. Then he gave a scream and fell dead. Doctors Aylesworth and Lynd were called, and discovered that he had taken an ounce of hydrocyanic acid. His financial prospects were bright, and he and his wife were very popular in Toronto. They were great bicyclists. Mrs. Thompson is a daughter of the late Rev. Dr. Stafford. They have one child. The deceased was only 27 years old.



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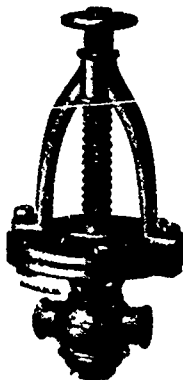
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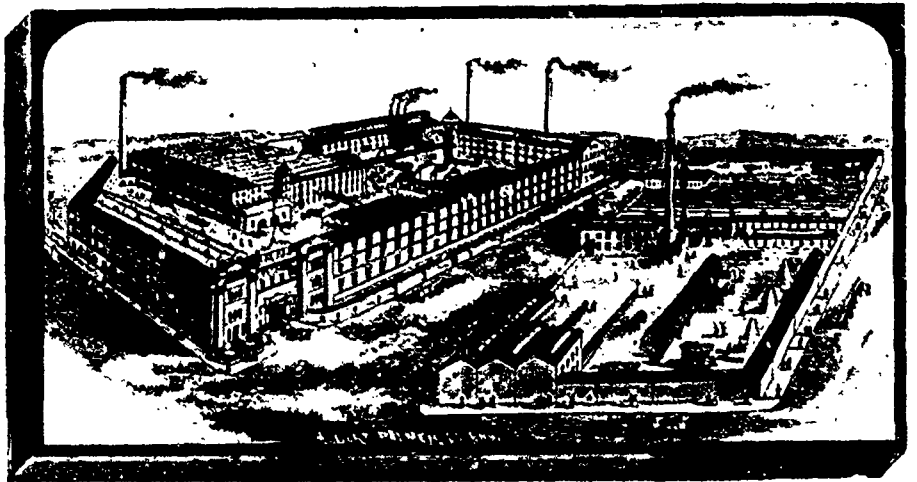
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