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CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIV.

TORONTO AND MONTREAL, APRIL, 1897

No. 4

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CONTENTS OF THIS NUMBER:

	PAGE		PAGE
Aniline Dyes, New	107	Linen or Flax Fibre The	102
Bleaching and Dyeing Coverlets and Shawls	98	London Fur Sale	105
Bleaching of Wool, The	101	Mills, Among the	116
Carpet Loom Fixer's Lament, A	108	Oliver Spencer Automatic	106
Chemicals and Dyestuffs	118	Scutcher or Wet Cutting Machine	107
Departmental Stores	97	Silk Hat The Centenary of the Tariff, The	115
" Legislation	107	" Commission, The	118
Editorial	97	Textile Centres, Foreign	112
Friezes, Cheap	114	" Design	110
Fur Sales, London	105	" Imports from Gr Britain	125
Hosiery Notes	112	Technical Education, English and German Methods of	103
" and Knt-Goods Manufacturers of the United States, National Association of	115	Water, The Technical Value of Pure	109
Hudson, The Late Victor	110	Wool, The Bleaching of	101
Knitting Machines, Making Quick Repair on	119	" Markets, The	110
		" Sales, London	106
		" Scouring	110

Editorial.

We Think Not.

In an editorial paragraph on the departmental store question, a contemporary makes this curious statement: "The establishment of the big stores has had a marked tendency to increase the aggregate business of Toronto merchants, taking into account both the retail and the wholesale trade. . . . They have taken away a considerable portion of the trade that formerly was done by the wholesale houses of Montreal, and to this extent Toronto has been benefited." How far from true this statement is may be gathered from the fact that the dry goods imported into Toronto in February,

1897, amounted to \$232,420 less than for the same period last year. The big retail stores of Toronto have injured the Toronto wholesale houses directly by absorbing the cash business of the small dealers formerly purchasing supplies from them. Trade has been diverted to Montreal also from the country which is more properly tributary to Toronto, owing to the fact that the country storekeepers are gradually coming to the conclusion that the indications point to the Montreal houses being longest in the trade. The suspension of a wholesale house always carries down a number of retail firms, and nowadays retailers are looking into the financial standing of those who supply them with almost as much care as the wholesale merchant exercises in selecting his customers. The country merchant who is free to do so is now transferring his account to whoever he thinks most able to carry it.

The Tariff.

Much has been made of the delay of the Laurier Government in bringing down the tariff, but tariffs are not made in a day, and it is well, for while they are powerless to create prosperity in the face of depression, or to avert the disaster which must always follow inflation, yet they can become most destructive weapons in untrained hands. The fact that the Dingley bill was passed in the U.S. House of Representatives within a month after President McKinley's inauguration is not pertinent. The Dingley bill was a hand-me-down, which a former Congress had refused, and has now been passed by a House elected largely by the money of the combines in whose interest the bill was prepared. The Canadian Parliament was elected largely in the belief that tariff modification was necessary, and much information on the question has been collected by those in charge of the proposed revision. During the time that this revision has been in contemplation great changes have taken place in the circumstances which must govern the framers of the measure. The United States has reimposed many of the excessive duties of the McKinley bill, and Canadians are face to face with a new problem. It is, how shall we so manage our tariff as to exclude as completely as may be the products of the United States from our markets, while at the same time imposing upon imports from Great Britain and our sister colonies such duties only as are absolutely necessary to the existence of our Canadian industries.

BLEACHING AND DYEING COVERLETS AND SHAWLS*

In order to obtain a pure white it is not sufficient to merely sulphur bleach the washed yarn, although this practice is, it is true, followed in the majority of cases, the result being that the natural yellow tinge of the fibre remains unaltered, except for being considerably cleaner. Very pure white can only be obtained by dyeing a faint blue before sulphuring. Formerly a spirit violet, generally in combination with Pense lake, was used for this purpose, the two being mixed together and boiled up in the soap vat before use, and then added to the dyeing bath as required. This spirit violet is, however, no longer obtainable (presumably because the demand for it was so small), and recourse has therefore to be had to methyl violet, either alone or mixed with the lake. Here again there is difficulty, since it is not every methyl violet that is suitable for the purpose in view, and many experiments have been made to find a reliable successor to the spirit violet, with the result that such a color has been found in violet 350 N (Poirrier and Dalsace, Paris), which may be used alone, and gives a very beautiful white.

The dyeing vat is prepared with good soap and kept at a temperature of about 125° F. Carded woolen yarns are washed in the usual manner before dyeing, but worsteds and weft yarns need no preliminary cleansing, the soap in the bath easily removing the few fatty and dirty particles they contain. After stirring ten to fifteen times, and working through the liquor well until the shade is right, the yarn is removed and dried in the centrifugal machine. It is essential that the transfer from the vat to the drying machine should be effected as rapidly as possible, otherwise inequalities in the color may ensue, so that a third man must be put on to assist in this work if the yarn has to be carried any distance. If left hanging, though only for a short time, the dyeing liquid runs down and colors the lower portion much deeper than the upper end of the hanks. To avoid this, in the case of the yarn left to hang the longest, it is advisable to partly wring out the hanks by hand as soon as they are taken from the vat. If the color be too deep, the yarn must be immersed in a warm soap bath. All inequalities may be also remedied in this way and by afterwards passing through a weak bath of dye.

In de-sulphuring with soap and ammonia, or by the latter alone, the bloom is somewhat injured. Nevertheless, this operation is in many instances necessary, on account of weaving the yarn along with other yarns the colors of which are susceptible to the action of sulphur.

To blue yarn evenly after sulphuring, a little soap but not by any means so large a quantity as in the operation already described—is added to the warm water, as well as the violet dye, the soap effecting a gradual and even absorption of the color; but much better results are obtained by dyeing before bleaching.

Piece goods are treated in exactly the same way as yarns. These also are usually sulphured only, but look much better if blued. In the ordinary process the sulphured goods are well damped, then opened out and drawn several times through a warm bath (about 90° F.) containing the requisite amount of color, and finally dried in the centrifugal machine. The machine for this purpose consists of a large beam, on which the cloth is wound—full width—by setting the axis in motion, and is then fastened by a surrounding cord. A cover is provided from which depend hinged sideboards, which when closed catch and drain the water expelled by the machine. It is highly advisable to have the dye vat and the dryer near to each other so as to avoid carrying the goods any distance.

Less frequently practised, but yielding better results, is the method adopted for yarns of dyeing before sulphuring, the former operation being effected in the washer after cleansing the goods. The percentage of soap depends on the water and the class of article treated, so that it is difficult to give definite particulars. The dye liquid should, however, handle very soapy and lather well. The goods are left in this bath for a quarter of an hour, and then sampled. Before adding any more color they must be taken out, since, owing to the form of the apparatus and the small quantity of liquid it holds, cloudy patches will be formed in the stuff if left in during the addition of more dye. In order to save trouble, as far as possible, it is a good plan to take a cutting of the piece to be treated, and test the dyeing bath with this sample to see if the right shade is obtained, and if not to modify the bath accordingly. A little practice and skill will be required to obtain equal results from sample and bulk. This testing should also be performed when dyeing yarns. When the goods have been colored, the dyeing liquid must be run off and fresh water admitted for rinsing, or else the piece must be rinsed in another washer. The latter is preferable when more stuff is to be dyed, since thereby a certain saving of soap is effected, the conditions here being different to those prevailing for yarns, the soap not being removed from the latter by rinsing.

The selvages and borders of white coverlets are mostly colored scarlet, rose, or pale blue. The first is still frequently produced by cochineal dye in a bath of 6½ per cent. cream of tartar, 5½ per cent. aluminum sulphate, 2½ per cent. stannous chloride, 1½ per cent. tin salt, 3½ per cent. hydrochloric acid, and 3½ per cent. nitric acid, the amount of cochineal depending on its quality and the depth of color desired. Such a scarlet does not, it is true, look as well as that prepared by the aid of 3½ per cent. saccharic acid and 1½ per cent. tin salt, but it has the advantage of being more permanent in the wash. Rhodamine B is much used for producing rose colors; to prevent it from running, the yarn must have been previously well washed and rinsed.

Pale, pure blue shades can only be obtained by using alkali blue; this color acts best for selvages when the dye is applied, not all at once, but at two or

* Translated from Oesterreich's Wollen und Leinen Industrie

three times, so that it may gradually combine more firmly with the fibre.

For shawls the colors most used are, in addition to those named above, black, green, and orange. The latter color, which is prepared from a flavine and cochineal with the above-mentioned bath, is seldom used alone for selvages, being more generally employed along with other colors in colored shawls. Green, on the other hand, is often used for white shawls. Not every green color is, however, suitable for selvages, but a mixture of light green SF and tartrazine (Badische Anilin und Soda Fabrik) acts very well. Shawls with green selvages require careful treatment, and should not be left wet for any length of time, or they will need to be acidified as soon as washed. A too strongly alkaline washing liquor will take the color out of light green SF or alkali blue, leaving only a muddy tint (tartrazine predominating) behind, which, however, can be restored by the aid of sulphuric acid. Should the injury to the color be extreme, then saccharic acid is used, being more energetic in this respect than sulphuric acid; generally, however, the latter will suffice. In sulphuring, care is also necessary to limit the exposure to 1 or $1\frac{1}{2}$ hour, otherwise the light green SF is attacked and the yellow tinge of the tartrazine stands out.

Since dyeing such shawls with colored selvages is generally avoided, only those with back selvages being as a rule so treated. Formerly very dark vat blue, which turned black under the subsequent dyeing, was used for these selvages, but this practice has been superseded by the simpler alizarine-black process, and is now only followed when white shawls with dark-blue selvages are in question. Occasionally Turkey-red and white cotton or silk fringes are provided, the former of which require to retain their original color after the shawl is dyed in the piece.

Coverlet yarns are strong and generally very soft, on which account dyeing must be effected rapidly, since the wool fibre suffers if boiled too long, becoming stringy and losing its open, woolly character, whereby the quality of the finished article is impaired. The dyeing process for the individual colors depends on the ground color; if this is white or other delicate shade, then the darker colors in the design require to be fixed more permanently than where there is a less susceptible ground. Alizarin colors have been tried and used, but gradually abandoned (at least in part), other direct dyes being found equally efficient and requiring less time, as well as producing a superior-looking yarn. The main point is to establish a system for the various associated colors, and to adhere to it until a simpler and more effective method is discovered.

So far as the various grades of scarlet are concerned—*e.g.*, brilliant, victoria and palatine scarlet, they are all suitable for designs containing Bordeaux, brown, olive, dark green, or other dark colors, but not—or at least not without danger—for light fancy colors. The same applies to the Bordeaux grades, such as amaranth, fast red, azorubin, etc. These are much used, although chiefly for shading with one and the

same color or in adjusting shades, as is the case with scarlet. In order to prepare both scarlet and Bordeaux sufficiently fast for white and other delicate shades, the best material in the former case is diamine scarlet B, and in the latter diamine scarlet 3 B, both of which are found to act very well. Diamine scarlet 3 B, which gives a very bright light Bordeaux, can also be shaded dark by other acid-dyeing colors, and particularly by adding to the dyeing bath a little acetic acid, and, if necessary, a little cream-of-tartar preparation, deepening by the aid of patent blue A J I and fast acid violet A 2 R. When this is attempted, a sufficient amount of diamine scarlet should be taken at the outset to counteract, by its yellowish tint, the bluish tendency of the other two colors. The subsequent addition of diamine scarlet is attended with conditions increasing the length of the operation, since owing to the acid in the bath liquor causing rapid and unequal absorption, a certain amount of the liquor must be run off if more scarlet is added, and be replaced with fresh water, a proceeding that of course decreases the dyeing strength of the bath.

A simpler, but not quite so efficient, method is to shade with chinolin yellow when the yellow tint is deficient. In commencing to dye with diamine scarlet it is not necessary that the liquid should have been previously cooled down to body heat; a boiling temperature may be employed, provided there is a sufficiency of Glauber's salt and only a slight quantity of acetic acid in the bath. More acid is then added by degrees, the color in such case developing slowly, but still more rapidly and securely than if the whole of the acid had been used at once and in a merely warm bath.

Very fine strawberry tints can be obtained from diamine scarlet B, especially when shaded with azo-carmin and fast acid violet, and the same applies to the dark fast rose color obtained by shading with rhodamine. Less permanent, but still very useful, strawberry colors can be produced from azo-carmin and chinolin yellow, or cyanol extra or patent blue the two latter being used for dulling the color. For dark brilliant yellow rose it is necessary to employ a fast scarlet, since if only rhodamine and chinolin yellow are used, a large proportion of the former is essential, the result being that the limit of saturation is easily exceeded and the color rendered liable to run.

For pure yellows with a reddish tinge, tartrazine is to be preferred, but chinolin yellow for those having a greenish cast. However, since both of these are dangerous to use with white grounds, recourse is had to the safer flavine.

Good results are also obtained from diamine golden yellow, which colors less brightly than the three already mentioned; and this dye can also be safely used alongside white. The addition of rhodamine will shade it to dull orange. Orange 2 is often used for fugitive colors, but is better avoided for coverlet dyeing. If it is desired to produce bright orange stripe effects, the safest method is that prescribed for selvaige yarns.

For peacock blue and delicate green shades, patent blue N, A J I, and cyanol extra are used. A brilliant

full green is obtained from light green S F, with chinolin or tartrazine, according to shade. For violet, the safest color to use is alkali violet, though in many instances an acid violet, shaded to a reddish tinge with rhodamine or fast acid violet A 2 R, will suffice. Methyl violet, although giving a finer color, has been abandoned owing to its tendency to rub off.

For dyeing the various fancy colors and marine blue, patent blue A J I, cyanol extra, fast acid violet A 2 R, acid violet 6 B N, azo carmine, and chinolin yellow are used. Yellow does no harm when added in small proportion only. For the deeper, yellow-tinted colors, such as olive, green, bronze brown, etc., tartrazine is used, being stronger than chinolin yellow. This dye equalizes well when added in large quantity, but less satisfactorily when used in small proportions for fancy colors. Orchil substitute is suitable as red color for browns, and Campeachy or naphthylamine black 4 B is used for black, as are also numerous other similar dyestuffs.

Rather dark, full colors, which only appear as small stripes or figures on white grounds, are produced by alizarin dyes, shaded if necessary with the prescribed direct-acid coloring material.

In order that one may decide on the most suitable method of dyeing to be adopted, it is necessary to have, not only a sample of the yarn, but also a cutting of the pattern to work from.

Shawl-yarn dyeing is, as a rule, performed with the same materials as used for coverlets. For stronger yarns for pattern shawls, alizarin and light and dark vat colors are employed. In the case of more expensive shawls, faster colors are generally taken than for coverlets, the necessity for this arising from the circumstance that shawls are worn in all weathers, and have, moreover, to be washed, so that running colors cannot be used. On the other hand, coverlets are not required to stand so much, the chief necessity being for them to pass the ordeal of fulling and finishing: if they do this they will behave satisfactorily under their subsequent treatment. On the foregoing account vat blue is preferred for shawl yarns, since mostly only narrow blue stripes are in question, and therefore the cost of the shawl is not materially increased, the dyeing being effected more quickly and the yarn remaining in better condition than if alizarin dyes are employed. Quick dyeing is the only method adopted. Notwithstanding that the finished shawls have merely to be washed and scarcely fulled at all, care is necessary in selecting the colors to go along with white. Shades of orange prepared with orange 2, and of scarlet from ponceau 3 R, when associated with white in the made-up article, have been found to color the white when washed and acidified, whereas the same shades produced from flavine and cochineal in the first instance (unfortunately the bath used for this attacks the finer yarns considerably), and in the latter case from diamine scarlet B, leave the white in undiminished purity. For single-colored articles, with, perhaps, variegated corners, the former colors, however, act satis-

factorily enough, these articles being in some cases never subjected to washing.

Thin shawls dyed in the piece are generally dyed direct in an acid liquor with good distributing colors, so that the fringes do not suffer. If dyed in the automatic machine, it is best to let the shawls run through in lengths of from 65 to 75 yards: if shorter lengths are used, the speed of the machine must be reduced, since if the same rate were maintained it would be impossible to avoid producing felted fringes, owing to the somewhat greater friction in this machine than in hand dyeing. This method is, however, preferable on account of the more even distribution of the dye. Shawls fringed all round are unsuitable for dyeing in the machine, the friction of which would very soon spoil the fringe on the longer sides. In this case care is necessary, even in hand-dyeing, to see that the shawls are not wound too quickly and that the liquor does not boil too much, if at all. Fancy colors can be dyed quickly, there being plenty of good distributing colors at disposal. For light blue, Victoria blues B and R are used with a weak acid bath, and scarlet is obtained most rapidly with orange 2 and rhodamine B, this being the brightest, although not the cheapest, color of the kind. It is well to use an old bath liquor for scarlet dyeing, as well as in the case of Bourdeaux, the latter being more uneven than scarlet in a fresh bath, so that time is saved and distribution facilitated by using an old liquor. For ordinary scarlets and orange colors in fresh bath liquor, 2½ lbs. of hydrochloric and 2½ lbs. of sulphuric acid, with 15 - 20 lbs. of Glauber's salt, are required to 80 - 100 lbs. of goods. The following batch needs only 1½ lbs. of each acid and 10-12 lbs. more Glauber's salt.

White or Turkey-red cotton selvages, when dyed in a good acid bath, will keep their original color. If black is in question, care is necessary, since not only will the direct-dyeing weak acid blacks dye the white cotton fibres, but will also dye the red. The simplest method of dyeing is to use a direct-dyeing black; and if this be adopted, the greater part of the color absorbed by the cotton can be removed by dipping the rinsed shawl in a lukewarm bath containing three litres of hydrosulphite per 500 litres of water, for ten to fifteen minutes, and then rinsing out once more. This subsequent treatment may, however, be avoided, and better stripes obtained—these stripes adding to the appearance of the shawl—by dyeing the black as follows: 6 lbs. of acid green 5 G, 4 lbs. acid violet 2 B, and 18 lbs. of orange 2 are taken to 130 lbs. of (worsted) goods, the treatment occupying an hour and a quarter. Any desired shade can be imparted to the black by increasing one or other of these colors.

For pale green, acid green 5 G, in conjunction with chinolin yellow and a little tartrazine, is preferable to the light green SF used for yarns.

There are, of course, many other colors suitable for the same purpose, but constant changing about from one to another is undesirable, and the preceding are

given as having stood the test of practice for some time.

To prevent the formation of wrinkles in shawls, it is better not to put them through the centrifugal dryer, but to hang them on rails to drip.

THE BLEACHING OF WOOL.

The wool fibre naturally possesses a color varying from pale yellow to brown, gray, or even black. In the case of "white" wool, the pale yellow color is intensified by the scouring process, especially if the latter is at all severe. In order, therefore, that goods which are to be finished white, or in any pale colors, may exhibit their full beauty, it is necessary that this yellow tint should, as far as possible, be removed.

The "Tinting" Process.—For some classes of work it is considered sufficient to neutralize the yellow color by applying to the material a very dilute solution of some blue, purple or violet coloring matter, which, optically combining with the yellow, changes it to very pale gray. The latter being a neutral tint, is much less obvious to the eye, and therefore the wool appears less colored, or more nearly white than before this treatment.

The coloring matters chiefly employed for the purpose are indigo purple (sulphopurpuric acid), methyl violet, or some suitable acid violet; and the process consists in simply working the wool in a very dilute acid or neutral solution of the dye until the required degree of tinting is attained. It is evident, however, that the "white" obtained by this means will quickly re-assume its yellow tint when the fabric is washed.

In order to produce an effect at once more permanent and more nearly approaching a pure white, the natural yellow color of the wool must not merely be covered by tinting, but actually removed, and to this end a bleaching process is resorted to.

It is not customary to bleach wool which naturally possesses a dark color, such fibre being used for the production of brown, gray, etc., fabrics, or mixed with white fibre for drab or "natural" colored goods.

Bleaching Processes.—At the present time two entirely distinct methods of bleaching wool are practiced, and they differ, not only in the agents employed, but are also opposed in theory. In the older, and still most commonly used process, the coloring matter of the wool is acted upon by certain reducing agents, and thereby decolorized. The pigment does not, however, appear to be destroyed, because wool which has been bleached in this manner becomes gradually yellow again, probably by oxidation of the decolorized pigment.

The more modern process is based on the fact that the coloring pigment is destroyed by certain oxidizing agents, e.g., hydrogen peroxide, and has, indeed, only been commercially practicable since that substance was placed upon the market at a cheap rate.

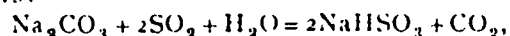
In carrying out the older process, which has been in use from time immemorial, sulphur dioxide, in the

gaseous form or in solution, is the reagent almost exclusively employed.

The Sulphur Dioxide Bleach.—When sulphur is burnt in air, sulphur dioxide (sulphurous oxide) gas is produced.

Cold water absorbs about thirty times its volume of this gas, forming sulphurous acid, which, like sulphur dioxide gas, readily absorbs oxygen when in contact with easily reducible substances, and is converted into sulphuric acid.

If sulphur dioxide gas is led into a solution of sodium carbonate, sodium hydrogen sulphite (bisulphite) is produced and carbonic acid is eliminated as follows:



and this body, which is sold as bisulphite of soda, is also employed as a bleaching agent. When bisulphite of soda is treated with a mineral acid, sulphurous acid is liberated.

Wool is usually bleached in the form of yarn or cloth, but is sometimes treated in the form of loose wool, and there are two methods of applying the sulphur dioxide as a bleaching agent, known respectively as the gas and liquid bleach.

In gas bleaching, which is also called stoving or sulphuring, the SO_2 is generated by burning the necessary quantity of sulphur, the resulting gas being led directly into the chamber containing the woollen cloth or yarn. The sulphur is ignited by means of a red-hot iron bar or cinder, and after ignition continues to burn without further application of heat. The bleach house or chamber in which the operation is conducted should consist of a buck room, the ventilating openings, doors, etc., of which are capable of being tightly closed. The roof of the chamber should be so constructed that the moisture condensed thereon cannot drop on to the material, since, being chiefly sulphuric acid of considerable concentration, this condensed liquid is a frequent cause of damage.

In conducting a bleaching process, the cloth or yarn is thoroughly wetted out and then placed upon the wooden rods with which the bleaching chamber is fitted. The chamber is then tightly closed, the fumes from the burning sulphur admitted, and the material allowed to remain all night. In the morning the chamber is first thoroughly ventilated and then emptied, the wool being subsequently well washed with water to remove sulphurous and sulphuric acids.

For thin material the rods may be advantageously replaced by rollers placed in series near the top and bottom of the bleaching chamber; and the cloth, travelling slowly, may be bleached by a single passage through the stove, the process being thus continuous.

The process of gas bleaching requires from 5 to 10 per cent. of sulphur calculated on the dry weight of the wool treated—the amount varying according to the thickness, color, etc., of the material.

In the liquid bleaching process a solution of sulphurous acid, or bisulphite of soda, is employed, in the latter case sulphuric acid being added in sufficient

quantity to liberate the sulphurous acid. The material is simply steeped or worked in this solution for several hours.

Whether "gas bleaching" or "liquid bleaching" is employed, the subsequent washing should be very thorough, since both the sulphurous acid used and the sulphuric acid formed during the operation are retained very tenaciously by the wool. The presence of any trace of sulphurous acid is especially objectionable when the bleached yarn is to be woven along with dyed threads, since many colors are considerably modified, and others entirely destroyed, by treatment with this reagent. Sulphurous acid is, moreover, much more difficult to remove than sulphuric acid, and, therefore, it is the custom with some bleachers to pass the material after washing through a dilute solution of bleaching powder, or (better) hydrogen peroxide, which at once oxidizes the sulphurous to sulphuric acid. This is then removed by further washing with water.

Theory of the Process.—Several theories have been put forward to explain the decolorizing effect produced by sulphur dioxide upon the natural coloring matter of wool. It has already been mentioned that wool bleached by this process gradually re-acquires a yellow color, and this fact gives support to the idea that the bleaching action consists in a reduction of the coloring matter to a colorless state, the original color being restored by a slow oxidation of the same by the atmosphere. Another theory supposes that the sulphur dioxide forms a colorless compound with the coloring matter; but that the first-named supposition is correct is rendered additionally probable by the fact that other reducing agents—such as stannous chloride in acid solution—will also decolorize the fiber.

(To be continued.)

THE LINEN OR FLAX FIBRE.*

Linen is the fibre of the flax plant (*Linum usitatissimum*), which is largely grown in France, Belgium and Holland, in Great Britain, Ireland, and certain districts of India, and in Russia, America, Canada, etc. There are a few other species of flax plants, but they are of insignificant value from an industrial point of view. The fibre is a bast fibre, and is found between the bark and the woody tissue of the stem. It is separated from both by the process of retting in water and scutching. The fibre as met with in commerce is very variable in length—from two or three inches to several feet. It is made up of a number of distinct filaments, which can be readily separated from one another. The whole fibre is notable for its length, color, fineness and strength. The filaments are also comparatively long, ranging from 0.157 inch to 2.598 inches, while the diameter ranges from 0.0006 inch to 0.00148 inch. When examined under the microscope the flax fibre is seen to be of a tapering form and pointed at each end, of a polygonal section, and with a central canal. It is somewhat variable in diameter through its length. The

walls are comparatively thick, which adds to its tenacity, while its suppleness and the length and the nature of the surface are of considerable importance from a spinning point of view.

The flax fibre as met with does not consist entirely of the fibre proper, but is accompanied by some other substances of a woody, waxy, etc., nature, the quantity of which varies with the nature and extent of the retting and scutching processes to which the fibre has been subjected. Of these impurities brief mention may be made.

By treatment with boiling alcohol, from 3.4 to 3.6 per cent. of extractive matter may be obtained from flax. A portion (about half) is deposited on cooling. This substance has the properties of a wax alcohol, and investigation shows it to be ceryl alcohol, $C_{27}H_{56}OH$. There are also present small quantities of other bodies of a ketonic character. It is the presence of this wax alcohol that causes the bleaching of flax to be so difficult, as it very strongly resists the action of alkalis.

Cold alcohol extracts from flax a quantity of matter (about 1.5 per cent.), which appears to have a complex composition, containing chlorophyll and products derived therefrom, a little ceryl alcohol, and a large quantity of an oil having an orange green fluorescence, which is a ketone of some kind and to which body the peculiar odor of raw flax is probably due. Accompanying the cellulose there are also about 25 per cent. of pectose-like bodies, which are easily soluble in boiling weak (1 to 2 per cent.) solutions of alkali, to which solutions they impart a yellow color. Nitric acid converts these pectose substances into mucic acid.

The oil wax is of very considerable importance in the spinning of linen thread, serving probably as a lubricant. Many attempts have been made to supersede the retting processes now in use, but some if not all of these have been failures on account of the fact that the fibre prepared by their means has not spun well. This may probably be ascribed to the fact that they have removed the oil wax from the fibre, which becomes, therefore, deficient in lubrication, and the fibres have not that freedom of motion necessary to spin well. On the other hand, to eliminate these waxy and oily matters from the cloth after being woven, necessitates a most elaborate bleaching process.

The flax fibre is classified as a pecto-cellulose, that is, a fibre which is accompanied by a quantity of non-cellulose bodies of a pectic or pectose character, whose main characteristics have already been pointed out. Another feature is that they give gelatinous hydrates.

It has been stated above that boiling with weak alkalis removes the pectose constituents from the flax fibre, leaving the cellulose constituent intact. It is considered by some authorities that we must view the flax fibre as being a distinct compound of these two constituents, hence the term "pecto cellulose", but this view does not seem to be altogether correct. Probably the pectose constituents are present as products of decomposition of the wool and bark surrounding the fibre

* From *The Textile Mercury*

when in the plant, or they may be even decomposition products of the cellulose itself. Further investigation on this point is needed. This should be partly chemical, partly microscopical, and made on different stages of growth.

When the true cellulose of the flax fibre has been isolated, it is found to have properties identical with those of the cotton fibre, in fact, so far, no reactions of a chemical nature have been found by means of which cotton and flax cellulose can be distinguished from one another. Their identity is established by their possessing resistance to hydrolysis and oxidation, and containing no active CO or OH groups. Acids, alkalis and solvents react with the two celluloses in precisely the same manner. The only difference between them is a morphological one—the difference in the form of the two fibres. What has been said of the properties of the cotton fibre applies equally well to linen fibre when the impurities which it contains have been separated.

ENGLISH AND GERMAN METHODS OF TECHNICAL EDUCATION.

Professor Ramsay, of the University College, London, has contributed to the *Times* a letter from one of the best known of German leaders in science, Dr. William Ostwald, Professor of Physical Chemistry of the University of Leipzig. The letter, which we here reproduce, shows what a small part the examinational system plays in German methods of instruction; and, second, what a close bond exists between the man of pure science and the man interested in its industrial application:—

"In our frequent discussions on scientific education, we have both often been struck with some points of very great difference between the English and the German way of dealing with it. As it may be asserted without national arrogance that university education is in Germany in a more satisfactory condition than in your country you are, of course, anxious to know which of the German customs I consider most effective in bringing about this better state of things, and I will, therefore, try to point them out. Of course, I shall confine myself to the subject of natural science, and especially chemistry and physics, feeling myself unable to deal with sciences beyond my knowledge"

"The main point of our system may be expressed in one word—freedom—freedom of teaching and freedom of learning. The first involves for the teacher the necessity of forming in his mind a clear conception of the scope of his science, for, as he is free to choose any possible method of view, he feels himself answerable for the particular one he has chosen. And in the same way the student feels himself responsible for the method and the subjects of his studies, inasmuch as he is free to choose any teacher and any subject. One who has not seen this system in action may be inclined to think that such a system must lead to arbitrary and irresponsible methods on the side of the teacher, and to

confusion on the part of the student. But the former is avoided, because at the beginning of his career the teacher is dependent for his advancement on the results of his scientific views, and is naturally anxious to improve his position in the educational world. And as for the students, they themselves impose certain restrictions on their own freedom. Most of them feel that they require some advice and guidance, and they therefore follow the usual and approved order in conducting their studies. As to the inventive man of original ideas, it has often been proved that for him any way is almost as good as any other, for he is sure to do his best anywhere. Moreover, such a man very soon excites the interest of one of his teachers, and is personally led by him, generally to the great advantage of both.

"Let us illustrate these general remarks by considering the course followed by an average chemist. In his first half-year he hears lectures on inorganic chemistry, physics, mineralogy, sometimes botany, and of late often differential calculus. Moreover, the German student is accustomed to take a more or less strong interest in general philosophy or history, and to add to his Belegbuch (list of lectures) to the above-named Fachcollegien (specialized studies) one or two lectures on philosophy, general or German history, or the like. Very often there are in the university one or more popular professors, whose lectures are heard by students of all faculties without reference to their special studies. The student who has heard during his stay at the university only lectures belonging strictly to his Fach, is not well thought of, and is to some extent looked down on as a narrow specialist. But I must add that such views are not prevalent in all faculties, and there are some—e.g., the faculty of law—whose students confine themselves, with few exceptions, to attending exclusively lectures in that faculty.

"In the second half-year the chemical student begins with practical laboratory work. Notwithstanding the perfect freedom of the teachers, the system first introduced by Liebig into his laboratory at Giessen is still universally adopted in German universities and technical high schools—viz., qualitative and quantitative chemical analysis, the former conjoined with simple spectroscopic work, the latter amplified by volumetric analysis. This is followed by a course of chemical preparations, formerly chiefly inorganic, now chiefly organo-c. Even here a regular system is becoming widely developed, owing to the use of some well-known text-books. Of late years this course is followed in some laboratories by a series of exercises in physical chemistry and electro-chemistry.

"While these practical exercises, which last for three or four half years, are being carried out, the student completes his knowledge of physics, mathematics and the other allied sciences by hearing lectures and working practically in the physical and often also in some other laboratory. The exercises done, he goes to the professor and asks him for a 'theme' to begin his 'work' viz., his dissertation for the degree of Dr. Phil. This is the most important moment in his life as

a student, for it generally determines the special line of his future career. The 'theme' is usually taken from the particular branch of the subject at which the professor himself is working; but, as the scientific name and position of the professor depends, not only on his own work, but, to a large extent, on the work issuing from his laboratory, he is careful not to limit himself to too narrow a range of his science. Of course it is the best for all if the student selects for himself a suitable 'theme,' suggested to him by his lectures or practical work, or from his private study of the literature of the science. But this seldom happens, for the young student is not yet able to discern the bearing of special questions, and lacks knowledge how to work them out. Sometimes (but not very often, indeed,) he points out to his professor in a general way the kind of problems he would like to work at, and the professor suggests to him a special problem out of this range of subjects. During the working out of his chosen subject the student learns generally much more than he has heard at lectures. Every part of the investigation forces him to revise the scientific foundations of the operations he performs. During this time the incidental short lectures given by the professor on his daily round from one to another of the advanced students are most effective in deepening and strengthening the student's knowledge. As these explanatory remarks are generally heard not only by the student whose work has caused them, but also by a number of fellow-students working near, a fairly wide range of scientific questions are dealt with in their hearing. Often these small lectures develop themselves into discussions, and, as for myself, I judge from the frequency of such discussions between the students whether the session will turn out a good one or not.

"If the professor thinks the work sufficiently complete to be used as a dissertation, the student proceeds to the close of his studies. He prepares himself for the examination, which is conducted by the very professors whose lectures he has heard and in whose laboratories he has worked. This examination varies somewhat in different universities, but in no case is it either very long or extensive; indeed, it is not considered as very important. For we are all aware what an uncertain means of determining a man's knowledge and capabilities an examination is, and how much its issue depends upon accidental circumstances. Part of this uncertainty is removed by the fact that the professor and the pupil know each other, are acquainted with one another's modes of expression and scientific views. The main purpose of the examination is to induce the student to widen his knowledge to a greater extent than is covered by the subject of his dissertation, but indeed it happens very seldom that a student whose work is considered sufficient does not pass the examination.

"We have no great fear that this system may induce a professor to treat his own pupils in too lenient a way, and so lower the standard of the doctor's degree. There was a time when such abuses used to occur, but there very soon arose such public indignation that the

abuses ceased to occur. Even at the present day similar instances occasionally occur, but, as before remarked, the position of the professor depends in such degree upon the value of the dissertations worked out under his supervision that such deviations from the right way correct themselves in the course of time. The most effective instrument for that purpose is the publication of all dissertations and the consequent public control over them; and for this reason publication is, I believe, compulsorily prescribed in all German universities. When the student has finished his course he is still entirely free to choose between a scientific and a technical career. This is a very important point in our educational system; it is made possible by the circumstance that the occupation of a technical chemist in works is very often almost as scientific in its character as in a university laboratory. This is connected with a remarkable feature in the development of technical chemistry in Germany—the very point upon which the important position of chemical manufacture in this country depends. The organization of the power of invention in manufactures and on a large scale is, as far as I know, unique in the world's history, and it is the very marrow of our splendid development. Each large work has the greater part of its scientific staff—and there are often more than 100 *doctores phil.* in a single manufactory—occupied not in the management of the manufactory, but in making inventions. The research laboratory in such a work is only different from one in a university by its being more splendidly and sumptuously fitted than the latter. I have heard from the business managers of such works that they have not unfrequently men who have worked for four years without practical success; but if they know them to possess ability they keep them notwithstanding, and in most cases with ultimate success sufficient to pay the expenses of the former resultless years.

"It seems to me a point of the greatest importance that the conviction of the practical usefulness of a theoretical or purely scientific training is fully understood in Germany by the leaders of great manufactories. When, some years ago, I had occasion to preside at a meeting, consisting of about two-thirds practical men and one-third teachers, I was much surprised to observe the unhesitating belief of the former in the usefulness of entirely theoretical investigations. And I know a case where, quite recently, an 'extraordinary' professor of a university has been offered a very large salary to induce him to enter a works, only for the purpose of undertaking researches regarding the practical use of some scientific methods which he has been working at with considerable success. No special instructions are given to him, for it is taken for granted that he himself will find the most promising methods; only, in order to increase his interest in the business, part of his remuneration has been made proportional to the commercial success of his future inventions. From this clear understanding of the commercial importance of science by the directors of industrial establishments, there science itself gains another advantage. A scientific man can

be almost sure, if he wants in his investigations the help of such technical means as only great works can afford, that he will get such assistance at once on application to any work; and the scientific papers of German chemists very often contain acknowledgments, with due thanks, of considerable help they have thus obtained.

"Besides these advantages for the development of scientific and technical chemistry in Germany, there exists another very important factor—practical assistance from the government. Universities are in Germany affairs of the State, not of the Empire, and in no other point has the division of the Fatherland into many smaller countries proved itself to such a degree a boon and a blessing. The essential character of the German universities, the freedom conferred by the independence of the numerous universities, is never lost. There have been hard times occasionally for the universities of one country or another; but some universities were always to be found where, even in times of hard oppression, liberty of teaching and learning remained complete and unaffected, and the spirit of purely unalloyed scientific research was preserved and encouraged. So this palladium of intellectual freedom has never been lost; and it regained the former influence as soon as the casual oppression ceased. In our days there is among all the separate State governments in Germany a clear conviction of the importance of practical support being given to pure scientific research. To take one instance, in order to facilitate teaching and research in electro-chemistry (a recently developed branch of science), a suggestion by some leading practical scientific men to the members of the Government was sufficient. Upon such a suggestion a considerable sum of money was spent first by the Prussian Government for the endowment of electro-chemical chairs and laboratories in the three 'polytechnic' colleges of that country; a short time afterwards it was resolved to erect at one of the universities, Göttingen, an institute for physical chemistry and especially electro-chemistry, in the shape of a building which has just been completed. At the same time other German countries have begun to grant their universities and technical colleges considerable sums of money for similar purposes—*eg.*, the Saxon Landtag alone has unanimously voted half a million marks (£25,000) for the creation of a splendid laboratory for physical chemistry at Leipsic.

"You will excuse my boasting about our German management of this most important question of scientific education. It is no blind admiration without criticism, for I know by practical experience the management in other countries, and I can compare them. And it is only for the sake of science itself that I write these lines. If they should help the spread of the conviction of the incomparable practical usefulness of every support given to pure science, together with the recognition of the fact that the latter can only grow in an atmosphere of liberty and confidence, I shall regard it as tending towards the progress of science itself, and destined to exercise such an influence on scientific progress as may be compared with the discovery of the most remarkable scientific fact."

LONDON FUR SALE.

The fur sales of the Hudson Bay Company came to a conclusion March 25th. The general tone was dull, and prices all round had a drooping tendency. The unsatisfactory state of the American market still maintains its depressing effect, supplies being large, while trade is partly deprived of its former channels of outlet. Also the home trade is hampered by the uncertainty of fashion, and the continental markets in their turn suffer as well from the inactivity existing here and in the States, the consequence being but little inclination to enter into transactions of a speculative character. The attendance of buyers was good, the Americans especially being present in large numbers. The results of the Hudson Bay Company's sale are about as follows:

Otter have been moving slowly, and the prime skins show a decline of from 15 per cent. to 20 per cent., the seconds 10 per cent. to 15 per cent., while the thirds are somewhat under 10 per cent. lower than last March. Fisher have sold fairly well and met with good competition. The prices of the firsts, seconds and thirds average an advance of about 10 per cent., and the pale are 20 per cent. higher. Silver Fox—General anticipations indicated an important reduction in the value of this article, owing to the demands of Russian fashion being more moderate for this expensive class of fur as compared with former years, but the decline generally has not proved so heavy as has been expected. The black and dark skins have sunk to rather low figures, quite 30 per cent. below those of last year, but the bright silvery and pale skins remain stationary at practically former prices, so that the average decline does not exceed about 12½ per cent. Cross Fox—As in the case of silver fox, this class of skin has also moved very slowly last year, the reduction in value all round being about 20 per cent. Marten—Of this article, among all others coming forward for sale, the best hopes were entertained, but contrary to all expectations, the latter have not been realized. This is the more surprising in view of the brisk competition which existed for the article in January, and which pointed to some advance (if only even a small one) in the present sales. An average decline, however, has resulted on the firsts, seconds and thirds of about 10 per cent., while the high class dark skins, as well as the pale and small sizes, were from 20 to 25 per cent. lower. Beaver are very much neglected, and declined 15 per cent. compared with January last, but the quality of the present collection was hardly up to that which was then offered. Musquash—There has been but little business done on this article since the January sales, and consequently there was no great inclination to increase present stocks. The small quantity offered attracted but slight attention, and sold at 15 per cent. to 20 per cent. lower prices, the quality of these skins, however, being inferior to that of the January collection. Red Fox—The change in values is very trifling, except in the case of thirds and fourths, which are about 15 per cent. un-

der last year. White Fox—This was another cause for surprise in the sale room, and the orders which were in hand for the American market have affected prices to the extent of an advance in prime skins of 20 per cent. to 25 per cent., seconds improved 10 per cent. Mink have sold fairly well, and there seems to be a more extensive use of the article predicted both for France and England. The competition was good and the prices average an advance of 4 per cent. to 5 per cent. on those of last year. Lynx—Although prices have now reached a lower level than can be remembered for many years, it has been quite impossible to find a consumption for the article, so that very large quantities have remained in hand for the past few years without an outlet presenting itself. A very considerable decline was therefore anticipated, as compared with last March, and the result was a fall of from 15 per cent. to 20 per cent. on all kinds. Wolf are neglected. The best sold 15 per cent. cheaper, and the lower grades are about 30 per cent. lower. Wolverine in no demand, and prices for the best skins are from 10 per cent. to 15 per cent. lower, seconds and thirds being quite neglected, show a decline of about 35 per cent. Skunk are also very considerably lower than they have been for some years past, the present collection showing a decline of about 25 per cent., which is equal to the prices of January last. Black bear—The demand for bears has now almost passed away, and only the greatly reduced values have tempted the home trade to compete for them, the result being an average fall of from 25 per cent. to 30 per cent. Brown bear declined from 25 per cent. to 30 per cent. Grey bear declined from 25 per cent. to 30 per cent. Musk ox—The collection was a very limited one; firsts advanced 25 per cent.; all other sorts are from 5 per cent. to 10 per cent. higher. Hair seals about 20 per cent. lower. Ermine advanced 40 per cent.

LONDON WOOL SALES

For the March series of London wool sales there were catalogued 331,000 bales, of which 106,000 were taken for home consumption, 95,000 for the Continent, and 95,000 for the United States. Sixty one thousand bales were held over, including 27,000 bales that were not offered. "In consequence of the large American purchases," Helmuth, Schwartze & Co., London, say, "which according to the suitability of the catalogue range from 2,000 bales to 5,000 bales per night, good and super Australian merino grease have gradually risen 5 to 10 per cent. and all kinds of greasy crossbred fully 10 per cent. above the January level. An opposite tendency manifests itself in the wools generally bought for the Continent. Partly owing to the depressed state of trade in France and Germany, which makes their buyers hold aloof, and partly to the very unsatisfactory yields which many of this season's wools have shown, short, heavy and faulty Australian grease have fallen 5 per cent. and are heavy of sale at this reduction. Under the influence of these opposing currents the market for greasy wool presents great irregularities, prices showing

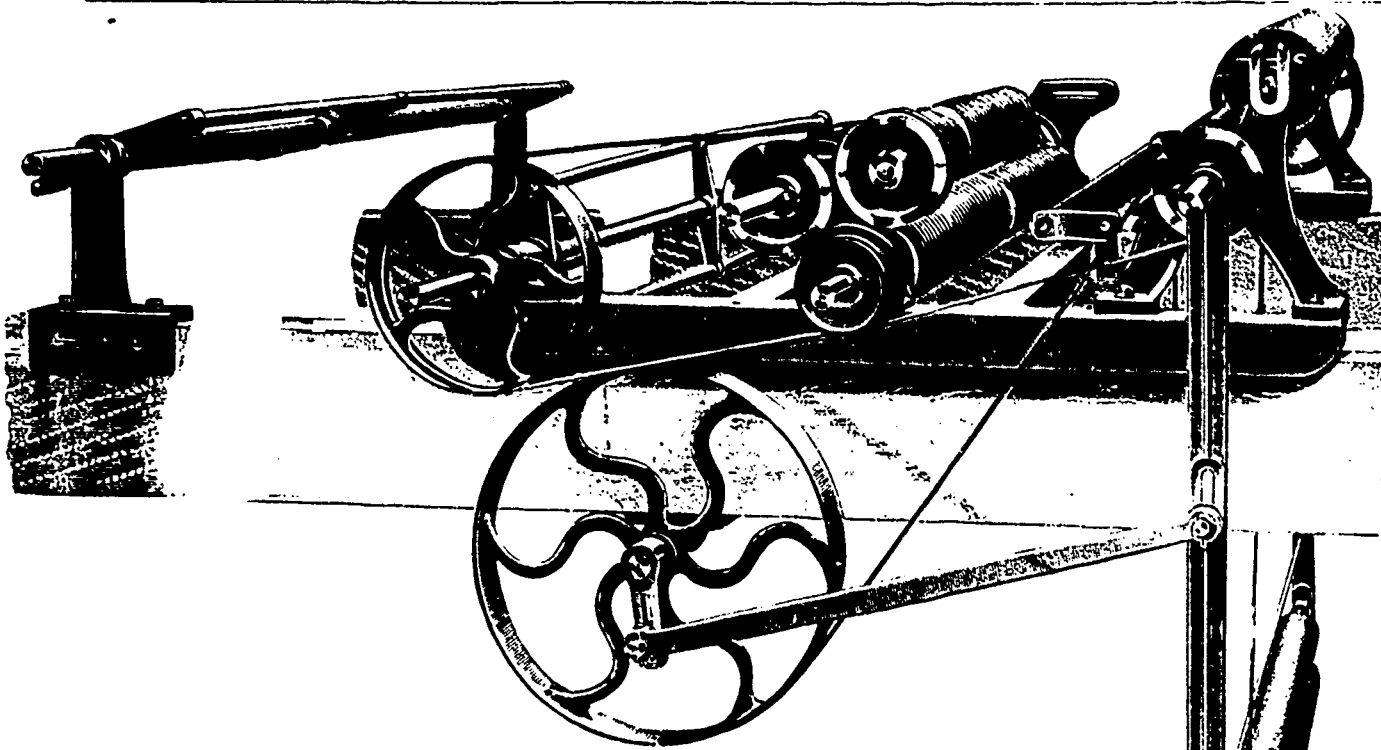
a high range for the top lots of many flocks, and then, the moment American competition ceases, dropping suddenly to a totally different level. Cape wools have not materially changed since the opening. Snow-whites and scoureds remain on the January level; good grease is but slightly lower, and only inferior and heavy grease have lost further ground and are fully 5 per cent. cheaper than last series." The next series will begin on 4th May.

SPENCER AUTOMATIC OILER.

We believe all manufacturers realize the necessity of an improvement in the system of oiling and dampening stock now in general use. An old broom or water can is out of place with modern methods, but they are still used because nothing better has been known, and though several oilers have been placed on the market, it is claimed they have all failed to meet many of the conditions under which they must work. The immediate and perfect success of the Spencer Oiler is due to its meeting every requirement, under all conditions. It is attachable to any picker, lump or lapper, whether fed by hand, self-feeder or duster, and works perfectly with emulsion or with oil warm or cold, thick or thin. Any required amount can be placed on the stock in a continuous spray, and this amount regulated accurately, simply by turning a tap. If moisture is required the proper degree can be added without mixing the water with the oil, or interfering in any way with the oiling process. No oil is wasted, but on the contrary there is a great saving of oil because it is sprayed directly on the stock, covering it more thoroughly and uniformly than is possible in any other way. By a simple registering device a given quantity of oil can be made to cover the batch exactly and evenly, and the superintendent or carder can tell at a glance whether the right amount is being used.

Some of the many advantages of the Spencer Oiler are so apparent as scarcely to need mention, while each manufacturer will see many new ones in adapting the machine to his special work. In the saving of labor and oil alone it will pay for itself in a very short time. Twenty-five per cent. less oil, when sprayed through the oiler, will produce the same effect and much better results than if applied in the old way. The stock will card better, the yarns will be more even, the goods will scour out more easily and there will be a great saving in card waste. To manufacturers who are troubled with electricity, the oiler will be of the greatest possible benefit. Much better and more even yarns can be made with less oil and waste, where the stock receives the proper degree of moisture, a fact recognized by manufacturers who are putting in Drosophores, and worsted manufacturers who are compelled to card their wool wet to make fine yarns. The manufacturers are Geo S. Harwood & Son, 7 Water St., Boston, Mass.

THE history of H. A. Lozier & Co., bicycle manufacturers in Canada, is one of progress. In the fall of 1895 they manufactured the first "Cleveland" bicycle in Canada, and in the short space of time which has ensued since then they have become one of the most successful manufacturers in the trade. Their success has been due not to luck, but has been honestly earned by embracing in the manufacture of the "Cleveland" bicycle everything that ingenuity, skill and wealth could devise. The thoroughness of manufacture and the rigid inspection which every part of the wheel has to undergo before being allowed to be used, is responsible for the fact that of the thousands of "Clevelands" that were turned out last season there was not one returned on account of defective workmanship. The prejudice against American wheels was, perhaps, natural, but not being based on any sound objection, has vanished before the "Cleveland." Not only is the "Cleveland" solidly established in popularity in all Europe, but it can be seen in use in every civilized country on the globe, and it is said to be, for instance, in Australia, the typical American wheel.



DEPARTMENT STORE LEGISLATION.

The first attempts to legislate the department stores out of existence have failed. A bill introduced into the Illinois Legislature, the provisions of which we referred to last week, has been laid upon the table, and the opponents of the large stores regard this as a decision not to pass legislation upon the matter in the present session. One of the interesting features of the debate in the Minnesota Senate on the Theden Occupation Tax bill, aimed at department stores, was the statement that the classification, as proposed in the measure, would severely operate against the country stores, some of which carried twenty-eight lines of goods under the classification proposed. The bill was referred back to the committee, with instructions to amend it by reducing the number of classifications and rearranging them upon a more equitable basis.

The bill before the Ontario Legislature was discussed this week. The Government recognized that the question was of great importance, and the Attorney General thought that something ought to be done to modify the evils attendant upon the growth of these immense concerns. This, he intimated, would probably take the form of a special commission, with power to enquire by taking evidence from both sides. Mr Whitney, representing the Opposition, said that retail merchants everywhere were suffering serious losses from these department stores. He told of an arrangement in Nova Scotia by which the Western Counties Railroad ran a special car for the daily service of distributing goods from a department store in Toronto. As it appeared to be the general opinion of the members that the question was too serious to be settled within the limited time at the disposal of the Legislature, the bill was withdrawn, upon the understanding that it should serve as a notice of action at the next session of the Legislature.—*Monetary Times*

THE WOOL MARKET.

TORONTO.—The market is bare of wools and few transactions are reported. Prices are nominal at last month's quotations. Fleeces combed, 22c; clothing, 20c; tub washed, 20c; rejections, 17 to 18c; pulled super, 20 to 21c; extra, 21 to 22c.

MONTREAL.—There is more inquiry for wool in this market than there has been for months. Some fair-sized lots of Capes have been sold at full prices, but some manufacturers are buying sparingly, as they say their orders for goods are coming in slowly. There are no changes in prices to report. Capes, 14 to 16½c; snow white Capes, 33 to 36c.; B A washed, 26 to 33c.

SCUTCHER OR WET CUTTING MACHINE.

This machine is for opening fabrics out from twine, rope or twisted form, and delivering the same full width to drying cans, mangles, wagons, etc. This cut shows the machine with double rollers and beaters and with plaiters down complete.

It is made with extra long bed, and all the brackets are brass bushed, the bearings are extra wide, loose brass-bushed governor boss; extra strong governor, extra strong scrolls, with copper foundations, with improved ends and centres, and improved noiseless single strap even-driving of scrolls, with strap-tightening arrangement and other numerous improvements, reducing wear and tear and breakages to a minimum. If on delivery it is not found superior to any other, the manufacturer, W H Harrap, desires it to be returned without further explanation.

NEW ANILINE DYES.

Katigen Black Brown N has been already brought before public notice in the columns of THE CANADIAN JOURNAL OF FABRICS, and is now placed upon the market by the Farbenfabriken Co. of Elberfeld, in the form of lumps. This product being hygroscopic should be kept in covered casks. The advantages of this brown are said to be without limit, no mordant is required, no heat and no handling, as it dyes easily level. The color dissolves quickly in warm water, 20 per cent gives a full dark brown. Use in about the following proportions—One pound color to one gallon of water, and allow the goods, if possible, to remain in the dye-bath over night. For following lots use only two thirds the original amount of color. The fastness of this color is its remarkable feature. Light strong acids and strong alkalis do not affect it in the slightest degree. As regards its fastness to washing, it cannot be excelled. Dyers who are interested would do well to write for shade cards and samples, also dyed skeins of yarn. By a special process, a full, deep black may be produced at a very low cost (a good aniline black substitute). *Katigen Black Brown N*, is a cotton brown, and will scarcely discolor wool. Latest pattern book will be immediately supplied on application to the Canadian agents of the manufacturers.

Chloramine Yellow and Chloramine Brown G were brought out a short time ago by the Farbenfabriken Co. of Elberfeld, and are colors entirely fast to chlorine, and which are not affected in the slightest degree by chloride of lime. These colors dyeing best on cotton with common salt are of especial value to the dyer who requires a color fast to bleaching.

Wool Black B is a new acid wool dyeing black of special value to light and steaming. On account of its fastness to washing, it is very suitable for dyeing yarns. Wool Black B gives a fine bluish black on chevots and worsteds, which can be toned to a rich deep black, by using a small quantity of orange or green in the dye-bath. The resulting black is fast to carbonizing with sulphuric acid. This black being low in price will meet with a ready demand.

Diazo Colors—The list of Diazotizable colors is always increasing. The latest addition is Diazo Black B. This black is very similar to Diazo Black B and is equal to the older brands of diazotizable colors in fastness to washing. A leading feature of this new brand is its property of forming, in combination with Cu S.O. 4, a copper lake, without undergoing any definite change in tone, the shade produced is exceedingly fast to light. The chief colors of the Diazo family are Primuline Yellow, Diazo Black B, H Diazo Brilliant Black R, Diazo Blue, Diazo Blue Black, Diazo Brown V, R, and G, and Diazo Brown R, extra. Common salt is the usual mordant, the cotton being boiled for one hour. The goods are next diazotised for one-quarter hour in a cold acidulated nitrite bath rinsed and developed. The resulting shade is in accordance with the developer used. With Primuline by using "Developer A," a fine, clear, bright red is obtained, with "B" a bordeaux and with "F," a bright orange. By combining the various developers many new and interesting shades may be produced. This three bath process of "dyeing," "diazotizing" and "developing" a color takes twice as long as the dyeing of an ordinary cotton color, but the resulting shades are very fast to washing and light, and do not bleed into white. Color samples, dyed skeins and special pamphlet mailed gratis on application to the Dominion Dyewood and Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany.

A CARPET LOOM FIXER'S LAMENT.

When the angry passion gathers in the weaver's face I see,
And she lights out in the alley, and I know she's after me,
Then I know that I shall catch it, and my flesh begins to creep,
And she winds up her story with "My carpet's full of streaks."

This one no more than turns her back before another comes,
With a face that would drive you crazy, and she's always chewing gum.

And she strides off down the alley like a sailor on the deck,
After telling me her troubles that her loom it don't protect.

And still another follows and her face it is a study,
And the anger in her soul makes her cheeks grow bright and ruddy,
And perhaps you are on the platform, with both eyes on your work,
When you hear a shout below you that would scare the bravest
Turk.

And below you stands a maiden, with a frown upon her brow,
And beside her stands another, but I'll not describe her now,
Down the alley comes another, and she looks up with a shout,
As she smilingly informs me that her blessed warp is out.

There are bent and broken needles, there are bad and broken cards
With pucker sticks and levers and shoes and straps and rods,
And all kinds of broken harness not to be left out in the cold,
Tis no wonder that a young man at this business soon grows old.

And when your last day's work is over, and you are far from weaver-room din,
St. Peter will throw the gates wide open, saying,

"You have had hell enough, come in."

— H. A. H. in *Fibre and Fabrics*.

THE TARIFF COMMISSION.

MONTREAL

John Moore, of the Mount Royal Hat Works, asked for the removal of the thirty per cent duty on hoods, which could only be used for manufacturing purposes. There was no manufacturer of hoods in Canada selling these goods—only one or two doing so for their own convenience. The finished hat only paid thirty per cent.

E. B. Greenshields spoke for the delegation from the Wholesale Dry Goods Association, and said that the general feeling amongst the members of the association was that they should not ask for any serious reduction in the tariff. He dwelt upon the importance to business men of permanence in the tariff. Mr. Greenshields then submitted the following resolutions, which had been adopted by the association, and which embodied the views of the dry goods men. "That the Montreal Wholesale Dry Goods Association, desiring to see corrected some of the anomalies and difficulties which at present exist, owing to the various rates of duty imposed on the same class of goods, hereby recommend that the tariff be so altered as to make the duty the same on all the different articles which go to make up classes of goods, such as cotton goods, woolen dress goods, woolen goods for men's wear, linen and jute goods, silk goods, notions, haberdashery, carpets of all kinds, knitted goods of all kinds, caps and bonnets, and clothing of all kinds. That this association recommends that specific duties be done away with, making the tariff purely ad valorem. That in the opinion of this association no goods which have gone through a process of manufacture should be permitted to come into Canada free of duty. That this association hereby places itself on record as being opposed to any proposition looking to a general uniformity of tariff. That in order to obtain a more uniform appraisement, the number of ports of entry should be materially reduced.

G. W. Sadler, Montreal, representing the leather belting manufacturers, said that the duty had been reduced from 25 to 20 per cent, and they asked that the duty be restored to 25 per cent. The consumption was not very great, and the importation of belting was a great detriment to the Canadian manufacturer, while there was no particular reason for it, as the article was not one that was used by the masses. There were five leather belting concerns in Canada, with establishments at Montreal, Danville, Missisquoi, Que., Toronto and Acton, Ont. Mr. Sadler said that the competition between the various concerns was keen enough, and the consumers got their goods just as cheaply as the consumer did in the United States. The consumption of leather belting in Canada amounted to about \$400,000 a year. The manufacturers tanned their own leather. The American duty on leather belting was about 40 per cent, a prohibitory duty. Mr. Sadler said he would not be afraid to meet the American manufacturer in an outside market, but what he feared was over-production.

The wall paper manufacturers were represented by Colin McArthur, M. Stanton and F. S. Foster. The deputation urged the necessity for the continuance of the tariff on paper hangings in its present form. An ad valorem duty had been found utterly inadequate as a protection to the home manufacturer, for the reason that the surplus and partially damaged stocks of the United States were dumped on this market regardless of cost, and so damaging the trade, and also gave great opportunities to dealers so inclined to evade the payment of the full duties by under valuation. The slaughtering of foreign goods increased to such proportions, coupled with the difficulty of properly appraising the value, that it was found impossible to have a specific form of tariff on wall paper. The present duty was 35 per cent on paper hangings printed in plain ungrounded paper, and on all other papers 1 1/2 c per roll, and 25 per cent on all other paper hangings. The deputation also urged the necessity of a specific or partially specific duty. In fact, it would be impossible to manufacture wall paper in Canada without it. Unless there was such a specific duty the United States would dump surplus stocks and push goods on the market. It was claimed that the duty on these two classes of goods should be prohibitive. The total output annually of this industry is \$250,000. The memorandum showed that the quantity of goods manufactured

has increased from less than one million rolls in 1878 to 8 250,000 rolls in 1896, the increase in value being from \$75,000 in 1878 to \$465,000 in 1896, and the industry is steadily growing in importance, while, next to the United States, Canada produces the cheapest wall paper in the world. The last and strongest argument offered was that the effect of abolishing the present specific duty would not benefit the consumer, as Canadian-made papers are retailed as low here as American goods are in the United States. The only result would be that, instead of being manufactured in Canada, our wall paper would be made in a foreign country.

John L. Gallette was the spokesman for the bag and jute interests. Three out of the four bag manufacturing companies of the Dominion were represented—the Beaver Bag Company, Dominion Bag Company and Canada Jute Company—the fourth being in Toronto. Hessians or burlaps, from which bags are made, are imported in the rough, and have always been on the free list since the first bag factory was started, twenty years ago. This cloth passes through five different machines, namely, cropping, damping, calendaring, measuring and cutting into sizes for bags. Imported finished Hessians pay a duty of 10 per cent., and to remove it would be to throw all these machines and operators into idleness. Manufactured bags pay twenty per cent., and the removal of this would be to transfer those employed into the miserable ragged community such as the workers in the jute centres of Europe. There was no combination as to prices among the bag companies, and every order was subject to keen competition. They, therefore, asked that Hessian imported in its rough state be admitted free, that the duty on finished Hessians of ten per cent. should be at least retained, if not increased, and that the duty of twenty per cent. on bags should remain as at present.

Elisha Fulton, treasurer of the Consumers' Cordage Company, said that the cordage and binder twine industry had settled Manitoba and had built the Canadian Pacific Railway. The first binder twine he had made for Mr McCormick, of Chicago, for twenty cents a pound, would bind as much in one day as the present binder twine at three to ten cents a pound would do in a week. The ropewalkers felt that they had built up the whole western country, and they were entitled to some consideration. The United States was their only competitor. England had tried to make it, but had not been successful. The mills of the cordage and binder twine industry are situated at Halifax, St. John, N. B., Quebec, Lachute, Montreal, Kingston, Port Hope, Toronto, Hamilton and Brantford, and give employment to 1,500 to 2,000 operatives. The average monthly pay list was \$30,000. For many years the cordage business was in a very deplorable condition, and mills were running at a serious loss. The Consumers' Cordage Company was organized in 1890, and for two and a-half years earned about twelve per cent. on its capital, but the change in duty and the insolvency of the largest cordage and twine company of the United States, caused the company to incur heavy losses and impairment of capital. He called attention to the special difficulties experienced in the manufacture of binder twine: the uncertainty which prevailed respecting the demand for twine for the coming harvest, and with a poor harvest the manufacturer may have to carry over a large portion of his product. The machinery he used had to be imported at a duty of thirty per cent. Then the effect of prison labor had been to deteriorate the quality of binder twine, and to crowd out legitimate manufacturers. He supposed that the Government had in view the supplying of twine to the farmer at a lower price, but this had been thwarted by the fact that the twine had not reached the farmer directly, but had been sold to the jobbers' agents, etc., and the farmer had paid the retail market price.

Mr Fulton quoted figures to show the quantity of binder twine and cordage imported into Canada during the last six years, as well as the quantity manufactured by Canadian mills, and declared that any reduction from the present duty would so largely increase the importations that Canadian manufacturers would be surely driven out of the business. To keep the twine mills in operation on a living basis it was absolutely necessary that the duty should be made the same as it was prior to 1893. The farmers bought the very cheapest twine they could get, and this would break in the binder, causing constant delays.

THE TECHNICAL VALUE OF PURE WATER.

BY A. ASHMUN KELLY.

This is rather a broad subject, but I shall confine my remarks to the consideration of pure water as related to the color producing and color-using trades. Color manufacturers, as well as dyers, have a much keener appreciation of the value of pure water than most physicians. It is absolutely essential in the production of certain pigments, and equally requisite in some kinds of dyeing. The least trace of iron or lime, for instance, will often work an untold injury to certain chemical pigments. Filtering only partially removes obnoxious foreign elements in the water, for the filtered water may be clear as crystal and yet contain at least traces of injurious elements, organic or otherwise. We are told by chemists that even distilled water, of the ordinary kind, is not free from such defects, though that is drawing it down pretty fine, as for all practical purposes distilled water is pure enough. The great trouble is the costliness of distilling vast quantities of water, such as color makers and dyers use.

Water is the greatest solvent known, readily dissolving not only solids, but gases also. It is due to this remarkable property of water that so much foreign matter, solid and gaseous, is found associated with it in its natural state. According to its source or associations it is found more or less so constituted. Thus, water from the clouds, as in rains, water from the surface of the earth, as in streams, and water from beneath the surface, as in springs, all possess varying amounts of gases and solids, vegetable or mineral matters. Rain water would give us water in its purest natural form, were it not for the fact that it takes in, during its descent from the clouds, much impurity always found in the atmosphere, but especially near large settlements. Sulphuric and carbonic acids are found in rain water, and ammonia is another frequent constituent. Much depends also upon the character of the surface of the roof upon which it falls. Rain water is often drained from roofs for culinary, as well as manufacturing purposes, and usually little attention is paid to the matter of the roof's character. First, it should be clean, then for the first few minutes of a rain the water should be diverted away from the cistern or reservoir, to run off the dirt. A slate roof is excellent where rain water is to be caught, but a tin roof, coated with graphite paint, is quite unobjectionable, as the paint is neutral and does not easily wash off. An iron paint surface would be very bad for the purpose, so also would be red lead paint, Venetian red, metallic brown, ochre, or any mineral containing iron oxide or lead. Where the location is somewhat distant from manufacturing centres, quite pure water may be obtained from this source.

Rain water is in every way superior to well or river water, because it is soft, denoting freedom from those mineral substances, such as the iron and lime salts principally, which are so inimical to certain colors.

River water is better than spring water, though the former may appear full of foreign matter, and the latter appear as bright as crystal. This is because matter held in suspension, as in river waters, is much easier to remove than the matter in solution. Thus river water, full of organic matter, mud, etc., may be quite clarified by running it into basins or reservoirs and allowing it to settle. This is the method usually employed by large cities and towns for their water supply. Such water is really more wholesome to drink than certain well water of crystalline brightness, and which may be full of impurities hid from the eye. Where a river water runs over an unpolluted course for some short distance before being pumped up into the basins or reservoirs, it is said to become perfectly wholesome for drinking, although far from being clear, but for dyeing purposes it would need even more than mere exposure to the sweetening influence of air and sun to fit it for use.

Nothing could be said in a small space to denote the importance of pure water for the dyer's purpose that would so well indicate this fact as the simple statement that 1 lb of lime salts, often found in water, is sufficient to destroy the detergent power of 10 lbs of ordinary soap, 1000 gals of such water would therefore destroy the power of at least 50 lbs of soap. Nor is this the whole extent of the mischief. The insoluble soap thus

formed deposits upon the goods and causes uneven dyeing, particularly where mordant colors are used. Again, trace of iron salts produce a yellowish coat upon goods in bleaching. Iron will dull Turkey red. Water containing iron or lime is always troublesome. Some of the mordanting substances are injuriously acted upon by the carbonates in water, saddening occurring, or if certain other substances (cream of tartar, etc.) are used, they are made neutral. Indeed, more or less changes, of greater or less degree of injury, occur from the presence of these foreign substances in water, and whenever used in the dyehouse the water should be pure. Even in the mere washing of dyed goods it is important to have pure water, for the presence of iron is sure to cause dulling of all the mordant colors. With acid dyes the effect is hardly serious. So with lead in the water. It will combine with any sulphur present, as in wool, and form black sulphide of lead.

Finally when anything goes wrong with the color or with the bleach, look to the water for a solution of the trouble. It is a great solvent. *Dyer's Trade Journal*

THE LATE VICTOR HUDON.

Victor Hudon a pioneer merchant of Montreal, died March 28 from the effects of an attack of "grippe" contracted during a visit to Roberval, Que., in January. He was in the eighty-fifth year of his



VICTOR HUDON

age, and during his long and active career in Montreal was highly esteemed by business men.

The deceased was born at Riviere Ouelle, Que., on August 31, 1812. In 1830 he became a clerk for M. Chouinard, Quebec. In May, 1832, he removed to Montreal, was clerk for J. B. Casavant, and was afterwards sent by him to St. Cesaire, where he remained five years. He then became a partner of N. C. Chaffers, St. Cesaire, Que., doing business also at St. Dominique and St. Pie. In 1842 Mr. Hudon returned to Montreal, and became a partner of his cousin, Ephrem Hudon, in the dry goods and grocery trade. The partnership was dissolved after fifteen years, and Victor Hudon continued alone, largely extending his import trade. For ten years he also did a heavy business at Havana. In 1872-73 he, with others, erected cotton mills at Hochelaga, under the name of the V. Hudon Cotton Mills Co. He founded the wholesale grocery firm of Hudon, Hebert & Co., Montreal. In 1834 he married Marie Godard, of Montreal. He had nine children, three daughters and six sons. Mr. Hudon was a member of the Board of Harbor Commissioners for forty years, and was for a number of years a director of the Jacques Cartier Bank, and always took a deep interest in the welfare of the city.

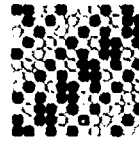
Jos. Bradshaw, who has been designer at Valleyfield, is now employed by the mills at Magog, Que.

Mrs. Margaret Rosamond, widow of the late James Rosamond, died at Almonte, Ont., March 20, at the age of 86 years. The late Mrs. Rosamond, whose maiden name was Margaret Wilson, was born near Paisley, Scotland, in 1811. In 1831, while a resident of Ramsay township, she was married to the late Mr. Rosamond, and for over sixty years she was his devoted wife. In 1856 she removed with her husband from Carleton Place, Ont., to Almonte, and continued to live there till the time of her death. She leaves behind her three sons—Bennett Rosamond, M.P., and James Rosamond, Almonte, and Wm. Rosamond, Cobourg, and two daughters—Mrs. Andrew Bell and Mrs. Hurd.

Textile Design

OVERCOATINGS.

No. 1



A, twist, composed of two threads at 687½ yards per ounce. dark shade, 9 turns per inch. B, like A, light shade. C, like A, lively shade. C, like D, another lively shade. E, dark spun, 343¼ yards per ounce. F, light spun, 343¼ yards per ounce. 3,220 ends, lay 70 inches in the reed. 11½ reed, 4 ends in a split, endshrink, 10 per cent, clear finish to 56 inches; unclean weight per yard, 22 ounces.

Dress

- 16 { 4 light B,
4 dark A,
4 light B,
1 end C,
3 dark A,
- 24 { 4 light B,
4 dark A,
2 light B,
1 dark A,
- 60 { 2 light B,
2 dark A,
5 dark A

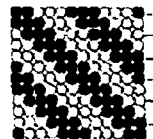
108 ends.

Weave

- 30 { 3 light F,
3 dark E,
3 light F,
2 dark E,
1 pink D,
- 36 { 3 light F,
3 dark E,
2 light F,
1 dark E,
1 light F,
- 30 { 2 dark E,
3 light F,
3 dark E,

108 picks in pattern. 45 picks per inch.

No. 2



Backward draft straight over.

A, worsted cheviot, dark shade, 437½ yards per ounce; B, worsted cheviot, 437½ yards per ounce. 2,958 ends; lay 68 inches in the reed. 14½ reed, 3 ends in a split. A, as indicated by different type in draft, end shrink, 7 per cent; rough finish to 56 inches; clean weight per yard, 16 ounces.

- Dress
- 2 light B,
 - 1 dark A,
- 3 ends.

- Weave
- 1 light B,
 - 1 dark A,
- 2 picks in pattern, 45 picks per inch

—*Boston Journal of Commerce*

WOOL SCOURING.*

The process of wool scouring, in, of course, a crude and primitive form, is of very great antiquity, since, in the earliest days of the use of wool or animal skins as a covering for the human body, the desirability of removing the naturally contained grease would at once become apparent. Originally a simple washing in water would no doubt be resorted to, but this process, as will be shown directly, would remove only a portion of the greasy matter. Later, some sand, clay or ashes was used during the washing, which, by mechanically rubbing off and absorbing the grease and dirt, would improve the effect. The efficacy of wood ashes in removing the grease and cleansing the wool, would then, doubtless, be soon noticed by our observant progenitors, and it is a moot point whether this or stale urine was the first form of alkali to be employed for the purpose. At a very early period the common soap-wort (*saponaria officinalis*) and the Egyptian soap-wort were also employed, these two plants being referred to

* From "Wool Dyeing," by E. A. Posselt.

by Dioscorides and Pliny as being used for cleansing wool in their time. At the present day, the soap nut (*sapindus mukorossi*) and soap-bark (*quillaya saponaria*) are used to some extent, the former principally in India, and the latter in South America. The employment of soap and soda-ash as scouring agents, is also of considerable antiquity. In treating of the structure of wool fibre, and again, when discussing its chemical composition, reference has been made to the greasy matter secreted by the sebaceous glands and excluded upon the fibre during its growth. This is termed the yolk or suint, and is of great service during the growth of the fleece in preventing the mechanical injury to the fibres which would arise if they became matted together. The suppleness and general suitability of wool for textile purposes are probably largely due to the protective action of the yolk. The presence of the greasy matter upon the shorn fleece also serves as a complete protection against the depredations of moths, the fact that moths will not attack unwashed wool, and that any material may indeed be protected from moths by contact with greasy wool, being first published by Keaumer in 1738. There is a certain small proportion of oily matter in wool fibre, amounting perhaps to about 1 per cent. of its weight, which appears to have a different function to that of the yolk, with some constituent of which it may or may not be identical in composition. This may be termed the lubricant of the fibre, since if it is removed, the fibre becomes harsh to the feel, brittle and less tenacious. The greasy matter constituting the yolk may be termed the preservative agent, and only after its removal does the fibre show its valuable properties to the fullest extent. In addition to the yolk, raw wool always contains dirt and earthy matter, sometimes to the extent of 20 to 25 per cent of its weight. Scoured wool must always be oiled before carding or combing, various vegetable or sometimes mineral oils being used for the purpose. This, along with any dirt which the fibre may have acquired in the various stages of manufacture, must, of course, be removed from the yarn or cloth. The object of the scouring process may therefore be defined as that of completely removing from raw wool the yolk or preservative greasy matter, along with all the dirt, etc., or from yarn or cloth all oily matter and dirt which may be present. In no case, however, should the small amount of lubricating oily matter be extracted. It is, of course, of very great importance that while care is taken not to injure the fibre, the scouring process should be thorough, since any grease left in the wool is likely to cause irregularity of shade in dyeing, and other defects in the finished material.

HOSIERY NOTES.

Continued

There is no doubt that it was a mark of popular approval when the English Government commenced their experiments with the seamless foot hosiery for their soldiers to wear, but, we may remark, because of the loose way of manufacturing seamless goods at that time (owing to the variety and unreliability of the operators), the Government came near condemning this article. It is also remarkable how the prejudice in the wrought fashioned leg business is losing its hold, since the introduction of the stiffened ankle, which is fast gaining popularity. As it is now possible to automatically graduate the width of the ankle to two thirds of the calf, without disfiguring the hose or increasing the price of a circular article, we say the wrought fashioning will no longer be regarded as a standard, but as a style. It has been said by doctors that in these days of low shoes, and fancy opened front uppers, the thickening brought about at the ankle in this style of fashioned legged hose, is most desirable, firstly, it prevents the colds attributed to low shoes and exposed ankles, secondly, it acts as a reinforcing thread, and an additional protection from the eyelet holes, buckles, clips, etc., of fancy footwear that are apt to wear. Apart, however, from this aspect, we believe the rising generations will regard the fashionings down the leg as a disfigurement, and, perhaps, refuse to buy an article so distorted. It may not turn out so, but it is quite within the bounds of possibility. As with the introduction of

automatic boot and shoe machinery, so with auto hosiery machines and other simplified systems of manufacture, the trade is once again being centralized, particularly so in regard to seamless footwear. In our opinion, the country knitter will be found a few years hence sticking to the knitter, and working on the impoverished conditions that the hand seamer experienced some years ago on the introduction of automatic seaming machines. We will not stop to question the liberty of any land of the free, that allows a wife or daughter, by undercutting the price of labor, to impoverish her needy neighbor, because the husband or father happens to earn sufficient to render their labor a pastime, some say it is the manufacturer who cuts down the prices, but we believe the blame is traceable to the operative in the main. As a result of the depreciated wages, the bag hosiery will for many years to come compete favorably with the manufacturer's costly systems of machines, skilled operators, etc., that is, unless some new automatic machine comes forward as cheap and simple as the present domestic knitter, in which case the present conditions of distributed country labor would obtain, as such a small automatic machine would find its way into the country homes, as the Branson & Griswold knitter did, that is, unless the price was prohibitive and the manufacturers monopolized it.

However, still the markets anxiously await the advent of that genius who can reduce the complications of hosiery production to small issues, and still every sanguine inventor is certain that he has discovered the Philosopher's Stone, that will knit the stockings with the golden thread. As to the increase or decrease of competition, the only competition we are conscious of is the new bogies of the machine trade who have cropped up, viz., the outside engineers who build machines by contract at a low price for machine dealers (supposed builders). This build of machine is well got up in style and finish usually, but whether they are as durable as machines built to order by skilled hosiery mechanics, in the established concerns who build knitting machinery exclusively and under the best technical conditions, is hard to say. So far as foreign competition is concerned, many thousands of pounds worth of knitting machinery are sent abroad, notwithstanding the high tariffs and the fact that there are many machines sent in return. This goes on in the manner of exchange that balances up pretty evenly, the imports being thereabouts equal to the exports as far as intrinsic value is concerned.

We know of no one machine that is likely to entirely predominate in any hosiery department, unless such features of advantage are to be found in the camless and latchless machine just introduced. Undoubtedly, many things can be suggested to further the interest of home trade abroad. We notice that trade interests are not conserved abroad to the extent that they might be, and the sooner the producer of a new article of universal adaptation takes the stand in the foreign markets he merits, the less his rights will be infringed, and the better for the public and himself. Admittedly, inventions are the foundation of every industry, whether the benefits reach the inventor's pocket or not, and to better our trade abroad we should lead out with that master card, the patent seal. Why inventors do not protect and consolidate their international rights, by banding together and instituting an inventors' trust, we cannot think. 'Til such action is taken as this, no bettered conditions may be expected for them.

The trade has to thank you and publishers of contemporary organs for the great help you give the manufacturers as a body, for after all, success turns on a very small pivot, and only by the dissemination of trade news and technical literature can a slumbering business be aroused sufficiently to realize that newer and more up-to-date changes abroad demand greater activity at home. Why make a technical paper of your standard exclusively a manufacturer's organ? A comparison of the workers of different countries prove some workers to be in sore need of instruction. We suggest that you publish the paper weekly and circulate it amongst the workers, as all such technical papers should be dealt with, to our way of thinking. Your price is a popular one, and we see no reason why a large circulation should not follow a practical change in your paper on the lines suggested."

MAKING QUICK REPAIRS ON KNITTING MACHINES.

There are times when it is necessary to hastily repair broken or worn parts on knitting machines, in order that a certain lot of goods may be finished at the specified time. It is an excellent plan for all mills to keep a supply department in which there shall be shelves and boxes for retaining the different parts of the knitting machine. These parts should always be kept in stock, and so arranged in the supply room that the fixer can place his hand upon any part promptly. Castings are procurable at a low price, and the expense of fitting up such a room is not great when compared with the saving of time and money resulting from having the small gearing of the knitting machines at hand in case of want. The parts need not be finished—they can be purchased direct from the foundry at such a low cost that manufacturers prefer to buy them in that condition and do the cutting of threads, drilling of holes, rimming out of bearings, painting, etc. at the factory.

But there are many manufacturers that do not believe in keeping a stock of supplies on hand. They contend to have ample supplies of new parts is to encourage the fixer to cast off parts of the machines before they are worn out in order that they may substitute new. Other mill owners have a supply department in which they keep parts that are most likely to give out. Few mills are so liberally supplied with extra parts of machines to warrant the fixer depending wholly upon these supplies in case of some part of his machines giving out. Although it is not advisable to do very much patching up on a knitting machine, it is better to skillfully piece a broken or worn part than to have the machine stopped several days while waiting for a new piece to be made or sent from the works. After having been in use a few years the cam is so badly worn that it cannot manipulate the butts of the needles correctly, and bad work is done. The remedy consists in substituting a new cam, but if none is at hand, the worn part can be cut away on an emery wheel or a grindstone and a new piece inserted and rivetted on. Such a cam will work all right until it wears away again.

When nuts bother by working loose on a knitting machine, it is, of course, practical to put on another nut, and by tightening the one close to the other, both nuts interlock and hold securely in the one position. But there are times when there is not room for an extra nut. Then have a hole cut and threaded in the side on the nut, put in a small set screw with a piece of leather on its end, and tighten it against the threads of the bolt. The set screw will be arranged to tighten with a screwdriver. The leather at the end of the set screw will prevent injury to the threads of the bolt. Another way to prevent the butt loosening is to put in a threaded pin, between the bolt and the nut. The revolving cam adjustment of the knitting machine is always subjected to more or less strain, and the result is that it breaks occasionally at the juncture between the edge of the elbow and the stud. If this part is not on hand in the supply room, and it is desirous of keeping the machine at work until a new adjustment can be cast or purchased from the makers, the break can be repaired in less than an hour by drilling a hole through the elbow and into the stud. The latter can be cut with a rather coarse thread and a set bolt put in. This bolt can be so securely tightened that the crank will work well and correctly for a long time. In certain styles of knit work there is a need of intricate fashioning chains and ball, and these chains must operate with great accuracy, otherwise the pattern will be imperfectly produced. The constant strain to which the links of the chains are subjected soon produces worn parts. The holes in the links are first to evince signs of wear, in which the bar holes are unshapely, elongated, and otherwise incorrect in proportions. The holes were perfectly round in the beginning, but constant use has worn them. The pin that holds the links together in the formation of the chain, also wears at the edges of the bearings. To remedy, have the holes in the links redrilled a few sizes larger than formerly, and new pins put in. After the new hole is drilled with a new pin the whole space is taken.

Foreign Textile Centres

MANCHESTER—At the moment there is not much doing in cloth. Granddrills are being bought for the home trade, and there is a fair demand for shirting cloths. Beyond this there is little to say. There is not much passing in the linen trade. The home trade departments are fairly busy, but there is not much doing for the States. The anticipated rush has not yet manifested itself. As far as linens are concerned, it is not likely that there will be heavy shipments at all, as linens are not produced to any noticeable extent in the States. There is a moderate output of crashes and other coarse goods, but nothing beyond. It has been assumed from the inability of the Americans to turn out linens in competition with Europe, that other classes of fine goods are the monopoly of this country, even against the tariff. As a matter of fact, the American market for English cotton goods has been going down for years. It is difficult to sell some grades of quilts against the competition of firms in New England, and the better end of the cotton trade—all that Lancashire has to depend upon as far as the United States are concerned—gets smaller every year. New York as a market for Lancashire goods is scarcely worthy of consideration, leaving out the velveteen business. The total turnover, in any case, does not exceed an average of three millions sterling a year. This is a poor total for a trade like Lancashire's.

LEEDS—In Leeds the clothing trade continues good. The factories are busy, and are receiving a plentiful supply of orders in spite of the recent unpleasant weather keeping back retailers' sales. There appear to be no striking novelties this season, but the styles of both fabric and make show better taste and more careful execution, without apparently any increased cost to the consumer. Cloths for the present season are wanted in haste, and the worsted coating trade has jumped up considerably for provincial consumption, while more best all-wool superfine broadcloth has been sold during the past few weeks than in many years previous. Melton cloth makers make a good deal of short time, but their branch is improving generally. In shipping there is little new, except that the American demand is stronger, and large consignments of heavy woolens are going on before the new tariff comes into operation. Fancy suitings, trousers and overcoatings form the bulk. The sealskin and fancy rug trades are moderately good.

Huddersfield.—In Huddersfield there is more doing for America, both in worsteds and woolens for very quick delivery, and the home trade demand for the best class of goods is also keeping up well. In the heavy woolen districts there is much complaining on the head of trade, and the new business on American account is quite insignificant. There is a good demand for some light fabrics for the spring clothing trade, and some specialties in mantles and costume cloths are keeping a few makers busy. In flannels makers tell me that they are getting their season's orders fixed up rather earlier than usual, and that the quantities are quite up to the average, although, in spite of dearer raw material, it is impossible to obtain much advance, and, therefore, business is closely cut.

BRADFORD.—The wool sales in London retained the firm tone with which the series opened, and all classes of Colonial wool, excepting inferior and faulty lots, realized prices at least equal and in many cases slightly in advance of opening rates. The American demand continues unabated for both fine merinos and good crossbred combing wools. This unusual buying on the United States account means that purchasers are supplying their requirements for many months to come, and as all this wool will be hoarded on the other side, stocks both in England and on the Continent will be kept low quite up to the end of the year, especially as the present year's clip in Australia is not expected to be a large one. The firmness thus created in London has, however, had very little effect on the wool market here, and spinners are only purchasing in the most cautious and hand-to-mouth manner, and any attempt on the part of wool merchants or top makers to put up prices at once stops business. There is not quite so much business in crossbred wool or tops, but as holders see no chance of replacing their stocks

without paying an advance, prices are keeping quite firm. In English wools further business is reported on American account, both in lustre and demi-lustre wools. There is also additional business in Irish wethers, and in low Scotch carpet wools on American account, and, from what I hear, on account of the slow demand from the Lome trade, they have been able to get in at very low prices in some cases, lower than have been known for a long time, so that when our Transatlantic competitors are protected by high tariffs, and have the assistance of such cheap wool, in some things they will be hard to beat from this side. The export trade in worsted yarns continues quiet, and following on the recent suspensions, there are reports of further weakness in some of the German manufacturing districts. In some special classes of super mohair yarns the home trade demand is very good for making crepons and some other novelties in high-class fancy dress goods. There is no doubt that Bradford makers are making most successful efforts in producing novelties of style and fabric in goods largely composed of mohair, which are making for themselves a permanent place in the highest class dress goods trade. Manufacturers who were in a position to produce largely and quickly novelties in medium-priced fancy dress goods for the coming autumn season are just now extremely busy for America, but should the new tariff bill come into force before the beginning of June there will be a lot of goods kept out in the cold. The houses here who export worsted coatings to the States are also busy getting off the stock which had been prepared for shipment as soon as the American trade opened out, and dyers of these goods are in some cases working day and night. For the home trade there is considerably more doing, and all the makers of high class black fancy dress goods are busy. Some who have made a specialty of fancy corded stripes on bright mohair effects and in repp jacquards are unable to take more orders.

ROCHDALE—At present, it appears that orders placed for next season are about upon a level with previous years, but the arrangements generally are likely to be concluded somewhat earlier than usual. Notwithstanding the dearth of raw material manufacturers are content to take orders at the old prices, in the hope that they may yet find some relief in the price of wool.

KIDDERMINSTER—No great pressure is felt in the carpet trade, but looms are pretty fully employed, and are likely to remain so. The yarn market just now is in a peculiarly irregular state. The result of the London and Liverpool wool sales has been to harden prices. In some cases prices of yarn are advanced in proportion to those of wool, in others, no alteration has been made, although the old price is now probably below cost. But buyers are not inclined to place orders, and they have, as a rule, a good quantity of old orders yet to come in.

NOTTINGHAM.—There is no change in the demand for lace and curtain yarns. Orders are sparingly placed, for which current list prices are demanded, quotations have not been severely tested, as there is no speculative demand either for the lower or the higher counts. Hosiery cottons are weaker in value and orders are scarce. There is a moderate demand for merino, cashmere and other wool yarns. Prices are somewhat irregular in accordance with the demand. Bobbin nets remain as heretofore. Prices are well maintained, owing to the export demand for special qualities. The home demand is slow. Business in some of the fancy lace departments has improved.

LEICESTER—The yarn market is active and healthy, and the prospect of higher rates has stimulated enquiries. Lambs' wool, cashmere and fancy yarns sell freely at full rates, and the consumption is above the average, but cotton yarns are flat. The spring and summer turnover in hosiery fabrics promises to be above the average, but the shipping trade is mainly confined to the colonies. The home trade is active and healthy, with large deliveries, while prices are decidedly firmer. Hand frames are fully engaged on orders for army and navy purposes. Elastic web specialties are in very good demand for home and colonial markets, but broad webs are a dragging trade.

SOUTH OF SCOTLAND—The South of Scotland tweed trade continues to improve, and manufacturers hope that matters will go as

they are doing at present. Winter orders are being confirmed in a most encouraging way, and makers generally believe that the turning has at last been reached in the long lane of depression. All the looms in the tweed centres are not, of course, running, but the position of affairs is a great improvement on what obtained a very few weeks ago. There is a steady demand for yarns, and wool remains firm in price.

BELFAST.—The improvement in the linen trade continues, and the tone of the market is more buoyant and hopeful. Some fair orders for yarns have been placed, principally for the coarser qualities. In the brown cloth market the turnover is in advance of any recent week, and prices are well maintained. A number of substantial contracts were offered at reduced rates, but manufacturers say that prices are hardly remunerative as it is, and hold out firmly for recent rates. The demand for 38 inch power-loom linen for bleaching continues steady, and manufacturers of these are booked ahead for some time to come. Damasks are in rather better request, and cloth for dyeing, and hollands is also in demand at firm prices. In bleached and finished linens there is also a steady improvement. The warehouses have been busy, and shipments across channel have been larger than for a number of weeks past. Orders from home warehouse men have been fairly plentiful and substantial, and the outlook is considered to be very bright. Continental trade generally shows signs of improvement. It is thought the proposed alterations in the United States tariff will hardly have much effect, even if passed into law, upon the finer qualities of linen goods, but will probably affect the coarser linens very seriously.

LYONS.—There is more confidence in silk goods circles in Lyons, due to more satisfactory advices from the United States, Paris and London regarding sales of spring fabrics. Reassortment orders for spring have been placed in fair quantities and consequently more activity prevails in the dyehouses. Among the goods ordered, muslins, chiffons, crepe lisse, etc., figure, and the favor for muslin shows no sign of decreasing. Taffetas have also been ordered in plain and changeable, in stripes, checks and plaids. Fancy gauzes are liked and sell in good lots. While there is an improvement in the manufacturing situation it has not been sufficiently important to give hand-loom weavers enough work to do. Fashion seems to favor tissues which are more adapted to be made on the power loom, among which are piece dyed goods. In the better grades of tissues the demand is not heavy. The greater benefit of the improvement is derived by the power looms, which are kept very busy, and there is enough work to keep them going until the fall order business opens. The ribbon market is active with a good demand for fancy effects in stripes, checks, plaids, etc. Plain satin ribbons find buyers in large lots. Velvets are quiet with a small movement for black velvet.

CREFRID—The demand for silk fabrics is fair, but has somewhat lessened, compared with previous weeks. Retailers having purchased as much as is necessary to meet the development of spring consumption, are waiting for their stocks to be lightened before asking for more. The home market is in a healthy condition, and a fair business has been done in changeable taffetas, plain taffetas and fancies on taffeta grounds. Checks in louisines are selling. Stocks in this market and in retailers' hands are rather moderate and such as not to interfere with regular business, although some of the oversupply with which 1896 closed has not yet been disposed of in foreign markets, and in London stocks of old goods are larger than they should be. Staple silks are moving regularly, but fashion seems to be more favorable to colors than to plain blacks. The cloak trade is still asking for moire velour, but long delivery orders are not placed by buyers, who prefer to purchase for ready delivery. Some business is also being done in cloak linings. The manufacturing situation has sufficiently improved since the year opened to be called satisfactory. The demand for dress and trimming silks for spring has caused an increase in production in this branch, while the placing of orders for fall delivery has also improved the conditions in the tie silk branch. In the umbrella silk industry business is over on plain goods, but many looms are still at work on parasol fancies, and some reassortment orders for these are expected. The ribbon

branch has not benefited much from the improvement, and the looms are not well provided with work. Velvets are quiet, but some business has been done for fall, and an increase in production will soon have to set in.

ZURICH—The silk goods market is not very active, few buyers being in the market, and business being also interfered with by a railway strike. The agreement signed by dyers and manufacturers prohibiting the loading of silk to excess is considered here by all concerned as a step in the right direction and from which the Swiss silk industry will ultimately benefit. Some business is being done in black and colored sarahs and merveilleux, but taffetas have the lead in the transactions, with a fair movement in changeable taffetas and checks, and plaids on tafeta. The raw silk market does not show a decided advance in prices, but a better business has been done, values are firmer and advices from all markets are more favorable. The silk situation is much stronger, but it is retarded by the political troubles in the Orient. In Milan transactions have been on a more liberal scale, and parcels of silk have changed hands for shipment to America as well as for European consumption. Japan silk is very firm and advancing and China silk is also firmer in sympathy with original markets.

CHENNAI—Many buyers will be disappointed when the few weeks are passed and the goods are due, as a number of manufacturers have promised considerably more than they can do, and thousands of dozens will not be ready at the dates ordered. Now importers are wiring to have their goods shipped at once, and give April 15th as the date on which the goods shall leave here. Dyers and finishers are overloaded, and cannot satisfy their customers' wants as quickly as they would like. As much fleeced hosiery is shipped at this time of the year, deliveries are still more delayed by the fleecing process. Large quantities of ladies' 40-gauge goods in the low-priced grades are ordered for speculation, as it is expected that those goods will suffer heavily under the new tariff. In misses' flat hosiery there has been a good many orders in the market, considerably more than in past seasons, from which it appears that these will be sold again in liberal quantities. The immense demand for Scotch plaids on ladies' goods has induced the manufacturers to make them for children's wear also, but in those they have not taken well, and blacks or tans are bought in preference. For ladies' goods, dropstitches and Richelieu ribs are used in large quantities, in the cheap grades as well as in hiles. Glovemakers are also filled up with orders until the middle of May. Four-button styles are again chosen in large variety of all possible contrasts of buttons, points and stitchings. Trade in underwear is also very lively, and manufacturers of ribbed vests have more orders on hand than they can fill, because they cannot get skilled hands enough.

CHEAP FRIEZES.

Although the sale of friezes has never assumed very large proportions, it cannot be denied that there has been a constant, if limited, demand for them for the ulster trade. Usually the better grades have come in for most of the trade, but like all other goods, a demand for something cheaper has sprung up, which, of course, must be satisfied. But when we are required to put upon the market a serviceable piece of cloth of this kind, which must weigh at least 30 to 32 ozs per yard for the ridiculously low price of 75 cents, we may well stop to consider how such a fabric is to be produced and still leave a margin for the manufacturer after paying living wages to his help. To make a piece of frieze of all wool or its equivalents at these prices, is simply out of the question, and therefore recourse is had to cotton warps.

In order to give good service, the warp must be exceptionally strong, so as to admit of using inferior stock in the filling. Still, the filling stock must possess felting qualities in a high degree, or else the success of making the fabric will surely turn to failure. Considerable importance attaches to the proper laying-out of this class of fabrics in the designing room, for if not properly put together all subsequent efforts will be found unavailing. Here is a point too often lost sight of in the manufacture of woolen goods. We find one mill making a certain line of goods without any appa-

rent trouble in any department, while at another mill, making the same class of goods and having the same facilities as the first mill, we find nothing running right and lots of trouble from beginning to end. There is constant complaining from the commission house. Overseers are changed, and everything possible resorted to but the right thing to foster success.

Where the fabric is put together right in the first place, and the stock used which is best suited to the goods which are being made, we do not find any trouble, and things run smoothly all the way through, the production is larger and better, and as a natural result competitors are left behind. Finishers are more often held responsible for the shortcomings of the designer and the superintendent than any other overseer in the mill, for where the goods are not properly put together, and the right kind of stock is not used, all previous experience counts for nothing, and all his efforts usually result in failure. When a finisher has some knowledge of the designer's art, he may be able to point out some of these shortcomings, and thus save himself from blame; but as this is not generally the case, he will have to shoulder the blame, and most likely have to make room for someone else. We have one particular mill in mind where this condition was most vividly illustrated; and after changing finishers eight times during one year, the proprietors at last changed the superintendent, when all trouble and friction ceased at once.

The color of friezes are usually brown, blue and black, and once in a while we find a very dark green, while all kinds of mixes are also used. As these goods receive an unusual amount of felting and are not sheared, the burling process does not amount to anything, while the mending is omitted altogether. The best way to handle these goods would be to wash them before fulling; but as this would increase the labor cost to such a degree as to wipe out all margin of profit, it cannot be thought of here. So we take them to the mill and put them in. The soap used must be of good and lasting body, with the alkali reduced to the smallest proportions. Take 4 oz of cotton-seed oil soap and 4 oz of palm-oil soap to the gallon, and alkali sufficient to stand 1½° Be, and no more. Wet goods thoroughly and evenly, and after they have run a while add part of the flocks required, leaving the rest to be put on later. Of course it is out of the question to make these goods without flocks, but care must be had that the flocks are put on right so as to stay. A simple cramming on of flocks, to have them fall off about as soon as the goods are made up, or even before, will not do. Whatever flocks they are to receive must be put on so as to be a permanent part of the fabric. This can be easily accomplished, first, by carefully selecting the flock with a view to its felting qualities, and, second, by a judicious application of the same.

It is surprising how much flock can be put into a piece of cloth to stay, if these two points are taken into careful consideration. Give us a good gig flock and let us cut it to our own satisfaction, mind, we say cut it, not grind it, as is so often the case, and there will be no trouble in making the flocks go on and stay on. As soon as the goods begin to get warm the mill should be opened at the back so as to keep them just barely warm enough to felt and no more, else the process will be too rapid and we shall not get what felt we want. A frequent overhauling of the goods may also be necessary, especially if there seems to be a tendency towards rolling or roping. If goods are properly laid out, however, this need not be feared, but for all that, overhauling them will put them back, and we are sure to get more felt. As soon as the goods get warm we add another part of the flocks, taking care, however, to watch the goods so they do not run too dry for every time we add flocks they will absorb part of the moisture, and this must be watched, for as soon as the goods get too dry they will chafe, and in this way we shall lose more stock than the amount of flocks we add, to say nothing of the value the stock thus chafed off would be to the look of the goods when finished. We can make weight with flocks and make the goods firm and compact with them, but flocks will not supply us with the fibres so necessary on the face.

After the fulling process has been completed we take the goods to the washer, and have a scouring liquor of good strength ready,

we put on a generous dose of the same, and, after running a little while, draw this off and give another dose, which will effectually clean the goods. Being so heavy, a little more rigorous treatment is necessary, and therefore the liquor may be 3° Bx, strong, but of light body. A thorough rinsing with warm water, with a quart of ammonia added to each piece, will leave them in good shape for the final rinsing with cold water, which should be very thorough, and the goods are then taken out, partly extracted, and rolled up tight on a stretching machine. If a machine with a tank for hot water is at hand, so much the better, as it will make the goods look much smoother if they are rolled up with hot water. Next morning they are thoroughly extracted, dried, and are then ready for the press and final operations — *Boston Journal of Commerce*

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the values in sterling money of the textile imports from Great Britain for February, 1896 and 1897, and the two months to February, 1896 and 1897.

	Month of February.		Two months to February.	
	1896.	1897.	1896.	1897.
Wool	£2,232	£321	£3,298	£2,360
Cotton piece-goods	62,244	43,352	138,097	102,698
Jute piece-goods	13,046	7,977	26,586	18,291
Linen piece-goods	16,605	8,864	45,048	25,804
Silk, lace	1,001	1,111	3,117	1,287
" articles partly of	3,438	2,995	8,020	4,457
Woolen fabrics	31,325	27,147	53,529	48,165
Worsted fabrics	68,665	56,854	127,213	136,659
Carpets	35,069	26,679	55,085	41,099
Apparel and slops	34,865	20,481	70,327	44,136
Haberdashery	18,985	18,794	39,397	32,575

THE CENTENARY OF THE SILK HAT.

The 15th January, 1897, was the centenary of the tall hat. For one hundred years now has the male world reviled the ugliness and the discomfort of this hat, and then carefully brushed up the venerated "stove-pipe" hanging in the hall, before venturing to challenge the glance of neighbor or office-boy. The "stove-pipe" first made its appearance before an astonished world on the head of John Hetherington, a Strand haberdasher. He conceived the idea that a tall hat would prove a most becoming addition to a gentleman's attire, and, acting upon the thought, called on Winkle & Co., Fleet street, who, at that time, were purveyors to the royal family, and from the plans which Hetherington laid down, the firm built a hat at the cost of £2. It was about ten inches high, spreading out bell shape at the top, with a wide brim, curved fore and aft. When finished it presented a neat appearance, the fine silk body having a sheen on top and on the sides. January 15th, 1797, was the date fixed by Mr. Hetherington for his first appearance in public with the new hat. He believed that in the natural course of events he would create a sensation, but he was not prepared for the commotion which followed. It was with no little trepidation that about eleven o'clock in the forenoon Mr. Hetherington emerged from his shop in the Strand. His family advised against it, but he was determined, and forth he sallied. The Strand, as now, was one of the busy streets of London, and Mr. Hetherington had not walked ten feet before merchants and others, attracted by the unusual sight, stopped and gazed in wonder. Mr. Hetherington, however, moved on, but men who had only stopped to look now followed after him, and in less time than it takes to tell it the street was crowded with a howling mob. Those on the outskirts of the crowd did not know the nature of the trouble, if there was any, but they heaped to swell the din. How Mr. Hetherington fared, however, is best told by the journals of that date, whose pages have been searched for information by *The Tailor and Cutter*. One gazette gave this account of the remarkable event: "John Hetherington, haberdasher, of the Strand, was arraigned before the Lord Mayor, yesterday, on a charge of breach of the peace and inciting to riot, and was required to give bonds in the sum of £500. It was in evidence that Mr.

Hetherington, who is well connected, appeared on the public highway wearing upon his head what he called a silk hat (which was offered in evidence), a tall structure having a shiny lustre, and calculated to frighten timid people. As a matter of fact, the officers of the Crown stated that several women fainted at the unusual sight, while children screamed, dogs yelped, and a young son of Co. Liwiner Thomas, who was returning from a chandler's shop, was thrown down by the crowd which had collected, and had his right arm broken. For these reasons the defendant was seized by the guards and taken before the Lord Mayor. In extenuation of his crime the defendant claimed that he had not violated any law of the kingdom, but was merely exercising a right to appear in a head-dress of his own design, a right not denied to any Englishman." The *Times* of the same date (January 16, 1797), in commenting on Mr. Hetherington's appearance, rather inclined to encourage the innovation, saying, among other things: "In these days of enlightenment it must be considered an advance in dress reform, and one which is bound, sooner or later, to stamp its character upon the entire community. The new hat is destined to work a revolution in headgear, and we think the officers of the Crown erred in placing the defendant under arrest."

NATIONAL ASSOCIATION OF HOSIERY AND KNIT-GOODS MANUFACTURERS OF THE UNITED STATES.

An organization of the knit goods industry was effected at a general meeting held at the Wool Club in New York city not long ago, and which was largely attended by manufacturers, who were present from almost every State in the Union. The meeting having been called to order, A. B. Valentine, of Bennington, Vt. was made temporary chairman. The object of the assembly was to obtain unity of action upon the tariff and upon other matters of the greatest importance to the trade. By organization it was recognized that manufacturers will be in closer touch with one another, and that many existing evils can be remedied. The constitution adopted at the meeting provides that the membership shall be restricted to the actual domestic manufacturers, with a provision for their representation by proxy at any meeting of the association, with the consent of the members present. After an animated discussion upon the various articles of the constitution and by laws, the election of officers was taken up. A nominating committee was selected by the chairman, who presented the following names, all of whom were unanimously elected: President, A. B. Valentine, Bennington, Vt.; vice presidents, J. F. Hanson, of the Macon Knitting Company, Macon, Ga.; Theodore Frelinghuysen, of the Index Knitting Mills, Phoenix Mills, N.Y.; A. W. Sulloway, of the Sulloway Mills, Franklin Falls, N.H.; W. S. Baker, of the Otis Company, Ware, Mass.; J. B. Colvin, of the Hay & Todd Manufacturing Company, Ypsilanti, Mich.; secretary, Howard W. Bible, editor *American Knit-Goods Review*, New York city; treasurer, C. T. North, of North & Doyle, Cohoes, N.Y. Executive committee, elected for a term of three years: Titus Sheard, of the Titus Sheard Company, Little Falls, N.Y.; George L. Hooper, of the Shaw Stocking Company, Lowell, Mass.; W. G. Maxwell, of the United Industrial Company, Roanoke Rapids, N.C. For a term of two years: Robert Pilling, of Pilling & Madley, Philadelphia, Pa.; John K. Stewart, of the Chucktanunda Hosiery Mills, Amsterdam, N.Y.; A. S. Ruhl, of the Nelson Knitting Company, Rockford, Ill. For a term of one year: J. H. Parsons, of the Parsons Manufacturing Company, Cohoes, N.Y.; Owen Osborne, Philadelphia, Pa.; Charles Chipman, of Charles Chipman's Sons & Co., Easton, Pa. A short address was made by John P. Curtis, special agent of the Cotton Yarn Spinners' Association, upon the subject of undervaluations. The secretary's report showed that letters had been received from over ninety manufacturers, stating that they would be present or represented, and from over fifty more, expressing approval of the movement.

E. J. Sanford, only son of W. E. Sanford, Hamilton, Ont., who died of consumption in Texas, where he had gone for the benefit of his health, was buried in Hamilton, March 20th.

Among the Mills

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

Renfrew, Ont., has a fur tanning factory

Wylie & Shaw's woolen mill, Almonte, Ont., is running full time

The St Croix cotton mill, Milltown, N B., through April and May, will operate only on alternate weeks.

The Niagara cotton mill, of the Dominion Cotton Mills Co., has had fifty new looms placed in position recently.

With the exception of the worsted department, the Rosamond Woolen Company's mill, Almonte, Ont., has closed for a time

The Granite Woolen Mill, St. Hyacinthe, Que., was badly gutted by fire April 5th. Loss, \$40,000; covered by insurance.

Yarmouth, N.S. Woolen Mill Company has been relieved of taxes in the sum of \$6,000 on personal property by the municipality

The Laskay, Ont., woolen mill, Mrs. J. Graham proprietor, was destroyed by fire recently. This was a one-set mill. No insurance

Wm. Thoburn, Almonte, Ont., added a car load of broad looms to his flannel mill recently, and the mill has been running overtime to fill orders.

Chas. Hart, of Almonte, Ont., is dead from consumption. For some years he was employed in Doughty & Hughton's woolen factory, Arnprior, Ont.

Alex. Taylor, Hamilton, hat and fur goods traveller for Western Ontario, has taken a position covering the same ground with M. Vineberg, of Montreal

The flax mill and farms belonging to the Livingston estate in Listowel, Ont., and vicinity, were not sold when offered at auction last month, the reserve bid not being reached

J. Elliott, G. W. Turvey, P. Thomas, R. N. Duff, J. Burgess, Bluevale, Ont., are applying for an Ontario charter to grow and manufacture flax at Bluevale, Ont., capital, \$6,000

The Cobourg woolen mills are to be sold by auction April 28th, at Cobourg. This is a seven-set mill, and also has a shoddy plant. Wm. Rosamond and J. S. Skeaff are the assignees.

Wm. Smith, superintendent for the Rosamond Woolen Co., Almonte, Ont., is president of the local baseball club, and W. Lowe, the head of the carding department, is on the management committee

The two-set woolen mill in the town of Tilsonburg, Ont., is advertised for sale. This is an old established business, no other mill in vicinity. excellent water privilege; James Brady is the assignee, Woodstock, Ont.

The by-law granting a bonus of \$30,000 to the Talbot Brussels Carpet Co., was voted upon March 23rd, by Sherbrooke, Que., and was carried, there being no dissenting votes. This new by-law became necessary on account of the company failing to begin work within the delay granted them in the other one. It is now claimed that \$60,000 worth of stock has been subscribed in the city

The town council of Farnham, Que., recently sent a deputation to Montreal, to wait upon the Montreal Corset Company with a proposal to induce them to establish a factory in Farnham. We understand the proposition is to give the company a bonus of five thousand dollars and a free building, which latter is already owned by the town. The company, on its side, is to guarantee the employment of at least 60 hands in the factory.

A. Campbell, manufacturer of carpets, Markham, Ont., has offered to compromise with his creditors.

It is said that McSloy Bros., manufacturers of hair cloth, St. Catharines, Ont., will establish a branch at Niagara Falls, N.Y., using electric power.

A spark from an electric light, over a loom in the St. Croix cotton mill, dropped on a warp recently and caused a small blaze which was, however, speedily extinguished.

A small fire, attributed to spontaneous combustion, started in the picker room of the Markham, Ont., woolen mill. The automatic sprinklers worked well, and the mill fire system proved ample protection

T. T. Shurtleff and C. A. Fox, of Coaticook, Que., have registered their partnership under the name of the Barnston Woolen Mill Co. The firm intends to manufacture and sell woolen goods at Ways Mill, Que.

Thos. Douglas, who has been super in the Mississippi Woolen Mills, Appleton, Ont., for some time, has severed his connection with them, and expects shortly to remove to the United States to take a similar position.

A Mrs. Cressman, who was employed at Wellesley, Ont., Woolen & Knitting Mill for the last five years, having done some domestic work for a Mrs. Cleghorn, when about to leave was busy packing up her things. Mrs. Cleghorn thought her bundle rather large, and on investigation found some of her own goods within it. She admitted having stolen other things from Mrs. Cleghorn, and invited her to her house to see what she had got. Mrs. Cleghorn, on reaching the hiding place of the woman's store, was surprised to find a small woolen factory there. About 1,700 pounds of yarn, whole webs of woven goods just from the loom, over 1,000 bobbins, some yet filled, horse blanketing, etc., were there, all belonging to the woolen mill. All this stuff Mrs. Cressman confessed having taken from the factory in small lots during her term there.

A bill was introduced into the Manitoba Legislature recently to assist a felt factory in Brandon, Man. This is for the manufacture of felt footwear of all kinds. The raw material in the shape of wool is produced and is probably as cheap in Manitoba as anywhere on the continent, while the great bulk of felt footwear, especially felt soled boots, is used in the country from Lake Superior to the Rocky Mountains. They cannot use felt soled boots in Eastern Canada or the greater part of the United States owing to the dampness, and practically the United States and Canadian west consume all this product. The men behind the project are Messrs. Senkbeil & Merner. The aid that it is proposed to give is a loan of \$8,000 or \$10,000 on real estate security. The factory is to be located at the corner of Rosser avenue and 4th street, and it is expected about twenty hands will be employed from the first.

—Portage la Prairie Review

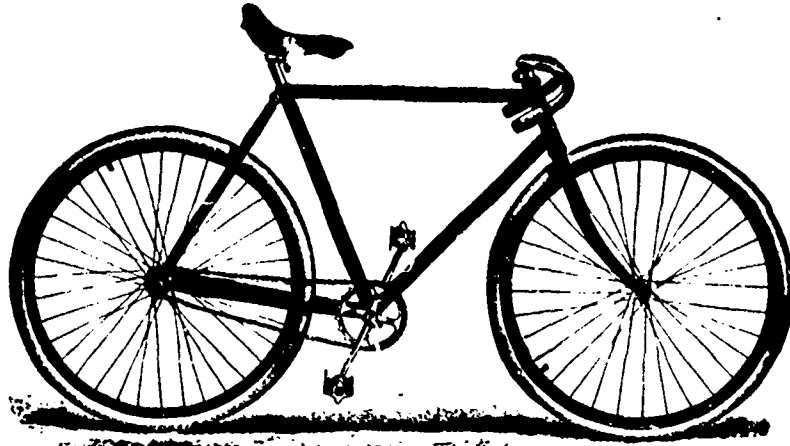
The Toronto Carpet Manufacturing Company has produced a "jubilee rug." In the centre of the rug is a wreath of the rose, shamrock and thistle, with the crown over all, supported on either side by Union Jacks floating over a sea-colored ground. In the centre of the wreath, "37-97"; in each corner a shield of "India," "Australia," "Canada," "Cape," representing the defence of the empire by the colonies in the four quarters of the world. A border of maple leaves forms the groundwork, the name "Victoria" forming the base of the whole. The quality of the carpet in the rug is a very fine grade of Axminster, giving a close velvet surface, and a fine, well-woven wool-back. The design and coloring are the work of the company's designer, Leslie Jones, who is the winner of a Queen's prize out of 3,700 competitors in the National Art examinations in monochrome painting in May, 1895, and also a holder of twenty-three certificates of the Art and Science Department of the South Kensington School of Art and Design

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The famous models that won the only Gold Medal at the Austrian Exhibition; beyond the power of any factory not having machinery specially designed for accurate and economical operation to construct at less than \$100.

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169 Yonge Street, Toronto.

T HARDING, who has been in the employ of A W Brodie, Hespeler, Ont., as foreman in the shoddy mill, has taken a situation in the United States.

The annual convention of the National Association of Credit Men will be held at Kansas City, Mo., June 9th, 10th, and 11th. The National Association was organized in the spring of 1896, and held its first annual convention at Toledo, Ohio. With less than a dozen local associations, there were one hundred and fifty delegates at Toledo. There are now over thirty local organizations in the principal jobbing centres, and others are rapidly organizing. It is expected that there will be at least fifty local associations when the annual convention shall be held in Kansas City next June, and from the unusual interest manifested, it is expected that fully six hundred delegates will attend the second annual convention. The Kansas City Association was organized about a year ago, and having only thirty members, has increased wonderfully, having now a membership of over one hundred and fifty, and the enthusiasm of the association in reference to its general work, and particularly as to preparation for the June convention, is proportionate to such increased membership. Every local association will send its regular delegates. Aside from the delegates, every member of every association will be welcome, and will have all the privileges of the convention, excepting only a vote.

CHEMICALS AND DYESTUFFS.

A good jobbing demand exists, and as stocks are light at this season, full prices are obtained, and there are no important changes to report. Chlorate of potash has advanced two cents per lb. Sal soda is 10 cents per 100 lbs higher. The following are current quotations in Montreal —

Bleaching powder.....	\$ 2 00	to	\$ 2 10
Bicarb soda	2 35	"	2 50
Sal soda	0 85	"	0 95

Carbolic acid, 1 lb. bottles	\$0 27	to	\$0 30
Caustic soda, 60°	1 80	"	1 90
Caustic soda, 70°	2 25	"	2 35
Chlorate of potash.....	0 15	"	0 20
Alum	1 35	"	1 50
Copperas	0 70	"	0 75
Sulphur flour	1 75	"	2 00
Sulphur roll	1 75	"	2 00
Sulphate of copper.....	6 00	"	7 00
White sugar of lead	0 07	"	0 08
Bich potash	0 10	"	0 11
Sumac, Sicily, per ton	55 00	"	60 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	2 00	"	2 10
Castor oil.....	0 10	"	0 11
Cocoonut oil	0 06½	"	0 07

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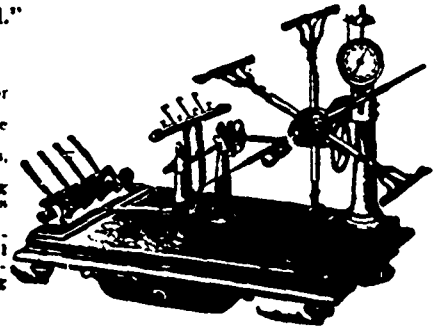
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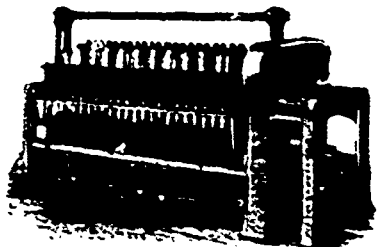
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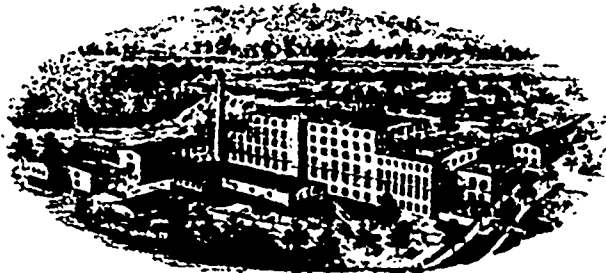
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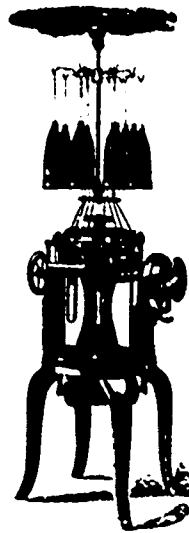
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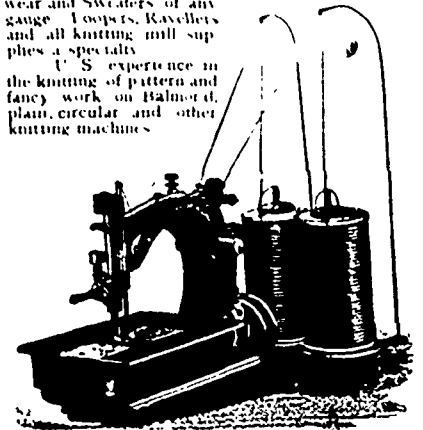
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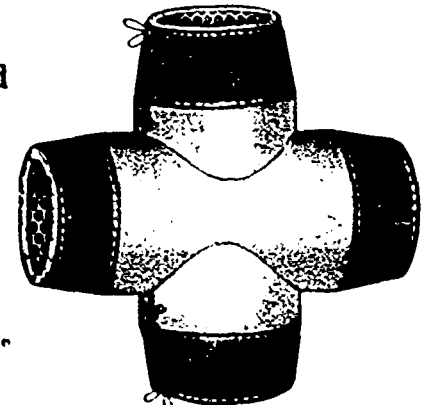


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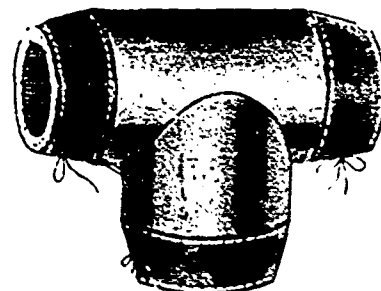
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LITERARY NOTES.

General Horace Porter's articles in *The Century*, "Campaigning with Grant," are being translated into Spanish by command of General Weyler, for his benefit, month by month, as they appear. The April *Century* is a "Grant Memorial Number." It contains an article on "The Tomb of General Grant," by General Horace Porter, who did so much to insure success of the movement toward raising the necessary funds for the monument, and who will be the orator of the day on the occasion of its dedication, April 27th, the birthday of General Grant. "Sherman's Opinion of Grant" is shown in a hitherto unpublished letter, and Grant's account of the veto of the Inflation Bill is related by the Hon. John A. Kasson, to whom Grant told the story. "A Blue and Gray Friendship," by Hon. John R. Proctor, describes the long intimacy between General Grant and General Buckner, who surrendered to Grant at Donelson. "Grant's Most Famous Despatch," the "fight-it-out-on-this-line" letter, is shown in fac simile for the first time, with an account of the original letter (written to General Halleck) by its present owner.

The Gripsock St. John, N. B., issued a special illustrated num-

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Walkerton, Ont.

ber in February, which details many of the attractive features of the Maritime Provinces as summer resorts

The competition announced by the Century Co ought to sharpen the wits of a good many persons. The 150 questions, for the answers to which money prizes of \$1,000 are offered, call for information on subjects with which most of us are less familiar than we imagine ourselves to be. The contest seems to be ingeniously arranged, and if it is followed by other competitions of the same sort, there will be a general rattling of the dry bones which lie useless and forgotten in the corners of one's mind. It would be amusing to see a set of questions prepared to test the general knowledge of the new books and the new plays of the last five years. Everybody was reading Lombroso for a time, and then came the vogue of Nordau's "Degeneration"; but it is more than probable that many of us who talked learnedly about "psychiatry" and "echolalia" have already forgotten the catch-words which for a time were spattered about the pages of the daily newspapers

FAILURES OF THE PAST THREE MONTHS.

The failures are distributed throughout the Dominion, during the past three months, as follow:

	No of failures		Assets.		Liabilities	
	1897	1896	1897	1896	1897	1896
			\$	\$		
Ontario	314	353	877,487	830,654	1,990,057	1,976,487
Quebec	240	311	600,091	890,000	2,015,648	2,624,980
New Brunswick. .	26	24	54,400	57,180	110,500	130,690
Nova Scotia	68	38	175,800	83,280	371,261	188,200
P. E. Island	4	7	15,800	12,868	37,602	21,568
Manitoba	17	10	103,095	98,050	203,404	175,000
N. W. Territory .	2	10	21,700	20,687	31,773	58,675
B. Columbia....	12	28	18,500	351,575	53,100	577,980

Totals, Canada, 683 781 1,866,963 2,345,494 4,819,345 5,753,586

In a classification according to interests, R. G. Dun & Co show that the traders have made a better comparative showing than the manufacturers. While 187 manufacturing businesses, with \$1,402,226 liabilities, came to grief in the three months of 1897, but 177 failures and \$1,110,776 in liabilities were reported during the same period in 1896. There were 471 failures of traders having liabilities of \$3,531,339, reported this year, as compared with 553 failures and \$4,608,914 a year ago. Two private bankers suspended payment during the first quarter of both years, the liabilities in 1897 amounting to \$80,000, as compared with obligations of \$32,000 a year ago

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Are you a Manufacturer of Hats or Furs?

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

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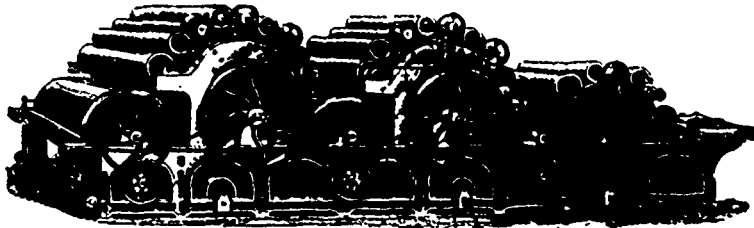
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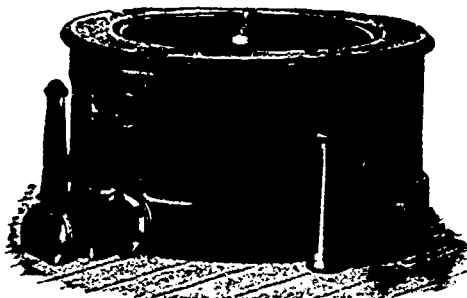
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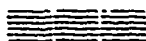
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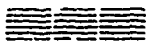
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Wright & Company, the largest dry goods store in Sault Ste. Marie, Ont., has assigned to J. G. Hay. The liabilities are \$20,000, a deficit of \$7,000 to \$8,000.

March 20th, a fire broke out in the building owned by Joseph Gaudette, and occupied by P. T. Dagenais, clothier, Arnprior, Ont., supposed to have originated from the furnace pipe. The fire did no damage above the basement, but the stock, which was insured in the Perth Mutual for \$2,400, was damaged by smoke and water.

Out of 16 steamers fishing in the North Atlantic, 11 reported, whose combined catches are only 21,000 seals, less than a load for one steamer. This is the worst record for 100 years. Including three laden steamers fishing in the Gulf of St. Lawrence, only 75,000 seals are now reported, and it is not probable that this number will be doubled before the close of the season, whereas last year's total catch was 220,000, which was regarded as much below the average.

The statement of James Bonner, men's furnishings, Toronto, as laid before the creditors, is not a very good one, there being a deficit of \$9,684. Mrs. Bonner, it appears, ranks on the estate, and Dr. W. H. Graham, of Toronto, also has a large claim for money advanced. There are about 35 creditors altogether, in Toronto, Montreal, Berlin, Hamilton, and Victoria, B.C., but they are mostly for small amounts, the principal claims being in the hands of half a dozen creditors. The assets amount to about \$6,260, of which \$5,942 consists of stock. The liabilities are \$15,765 direct and \$180 preferred, a total of \$15,945, leaving a deficiency of \$9,684. Among the creditors are Gault Bros. & Co., Montreal, \$6,142; Dr. W. H. Graham, Toronto, \$3,686; H. J. Caulfeild & Co., Toronto, \$1,904; Mrs. J. Bonner, \$1,000; Henry S. Mara, Toronto, \$940; C. P. Magann, Toronto, \$420; Rebecca Skae, Toronto, \$215.

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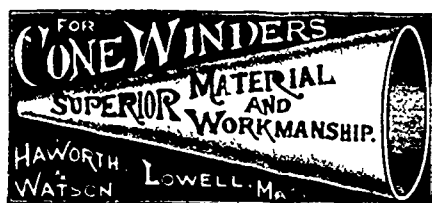
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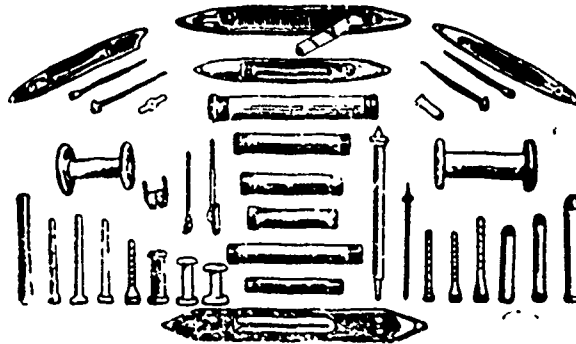


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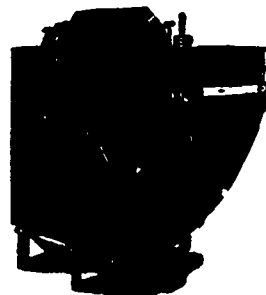
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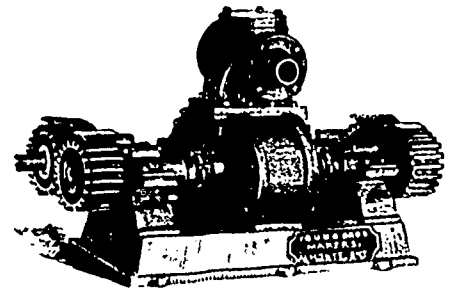
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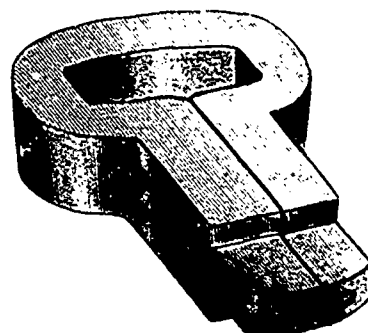
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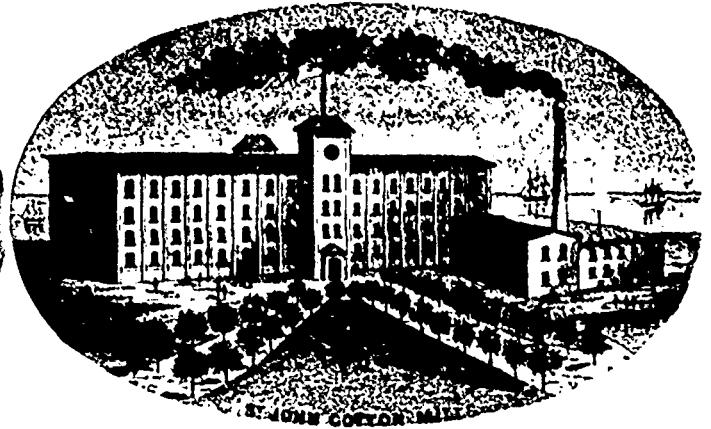
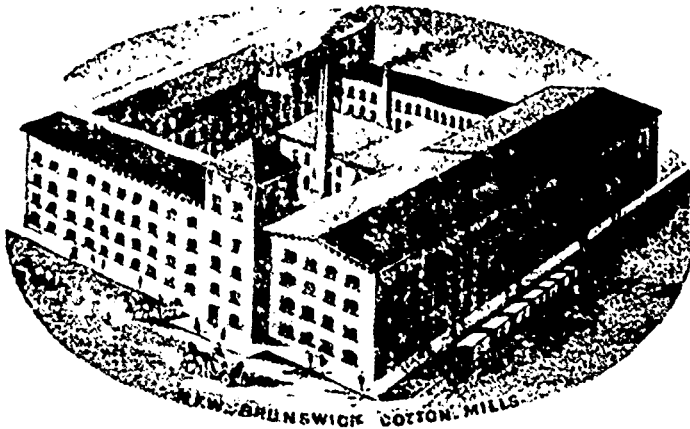
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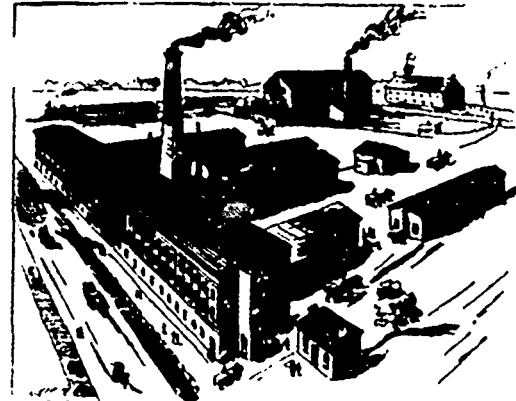
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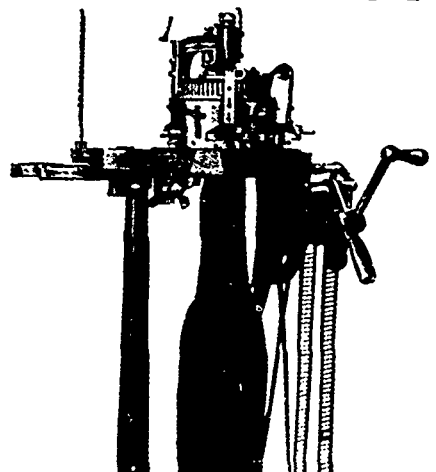
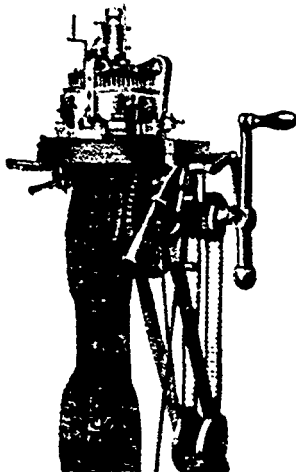
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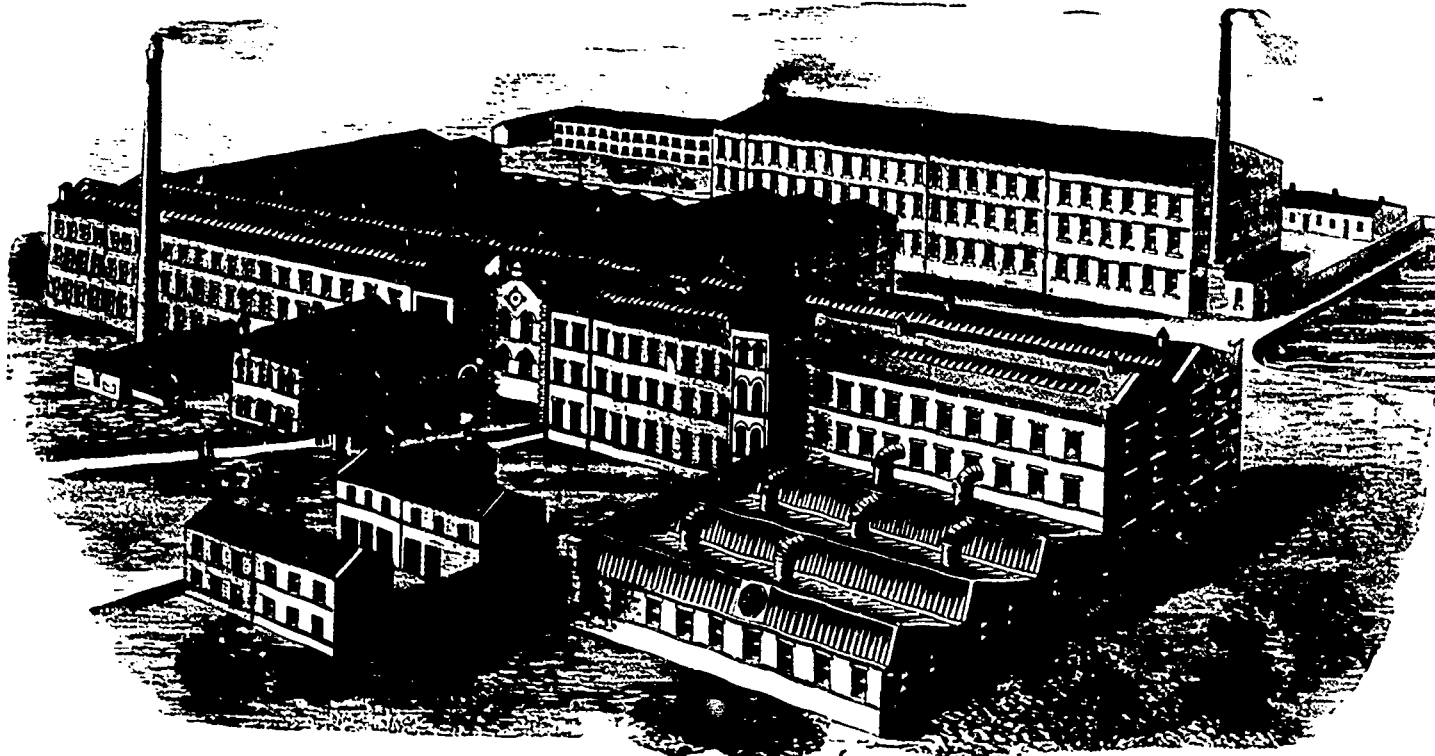
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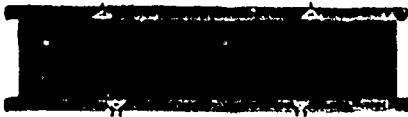
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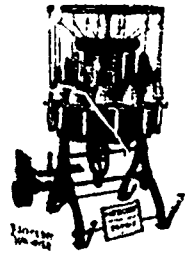
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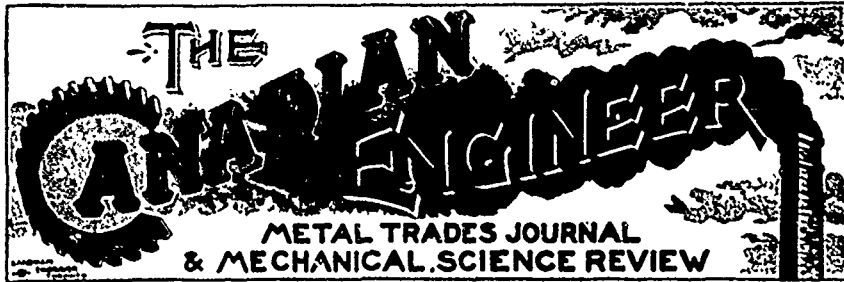


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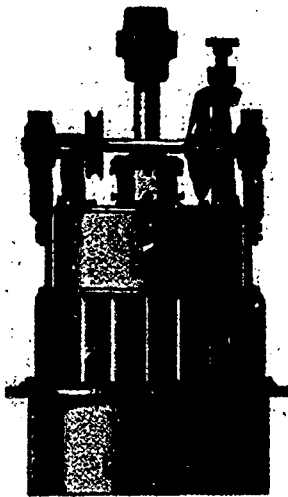
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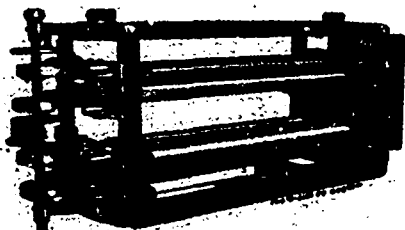
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