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# CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIII.

TORONTO, MARCH, 1896

No. 3

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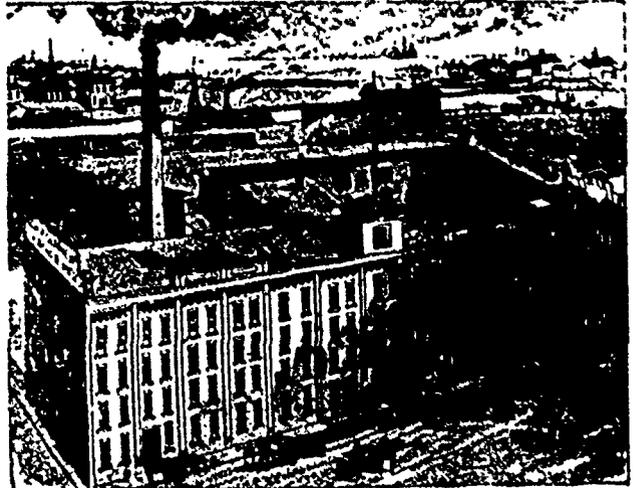
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# CANADIAN JOURNAL OF Fabrics

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Vol. XIII.

TORONTO, MARCH, 1896

No. 3.

## Canadian Journal of Fabrics

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

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## Editorial

**Room for Improvement.** We are apt to get the idea fixed in our heads that because of the advances made in machinery in this age, all that we have and make is superior to that of other times. That machines are not capable of everything is clearly shown when we compare the product of skilled fingers six thousand years ago with the output of our most improved mills to-day. The story is told of the bringing of a mummy from Medum by Professor Flinders Petrie, and of its unwrapping by Professor Stewart,

who found it to be enfolded in a gauze-like texture, which was at first taken for papyrus, but accidentally discovered, by microscopical examination, to be linen which was incomparably finer than any which could be had to-day. In the same way, the muslins of Hindustan, that were made in Hindustan with appliances of the most primitive description, and by methods that had been at a standstill from time immemorial, cannot be equalled by the product of the machinery of to-day. Those who think that the industries of the Western world are about to go down before the competition of the reviving East, should take into consideration that it is in the West that advances in machinery are made, and that until the product of the machine stands equal to the product of the hands of long ago, there is room for the machine to improve; and while the machine is advancing, the products of the West will maintain their position in the markets of the world.

### Commercial Dry-Rot.

A short time ago the *Shareholder*, of Montreal, referred to the failure of a Huddersfield firm as being caused by "dry-rot, i.e., trying to do business in 1895 on the principles in vogue in the preceding century." The *Draper's Record*, London, England, whose attentions to Canadian journals have recently been more marked than good natured, promptly ran a tilt for the honor of British commerce and its own advancement, and entered the lists to this fanfar: "The criticism is not very clear, but with a knowledge of the fact that E. P. Savery & Co. stopped payment owing to a disappointment in their remittances from America and Canada, I take it that the *Shareholder* means that relatively there is not very much difference between Canada of to-day and Canada in 1795 so far as punctuality of remittances is concerned." Without pausing to explain to the *Draper's Record* that "America and Canada" is a phrase of almost as much meaning as "Europe and England," we would point out that remittances from Canada are, as a rule, very satisfactory, and that if "America" is here supposed to designate the United States of America, the Montreal publication is in no way concerned therewith, the chaotic condition of fiscal legislation in the United States being a sufficient explanation of all deficiencies in the matter of prompt payments from that quarter. Canada may be America—it is the larger half of the northern continent—but the United States is not America, and we decline to allow

this slander on Canadian commercial integrity to pass. It is pleasing to note that only a week later our London contemporary discovered what the Montreal writer meant by "dry-rot." We quote in full:—"A good example of the lack of enterprise occasionally displayed by British manufacturers in regard to trade abroad is furnished by a letter from an importer in Salonica, addressed to a Manchester house and reprinted in the newly-issued Consular Report relating to the trade of that district. English manufacturers are competing very successfully with Swiss rivals in the production of the cotton hankierchiefs that find so large a sale in that region. In Macedonia a particular size is in special demand, and the importer mentioned above accordingly wrote to the Manchester firm offering a sample order of 30,000 dozen of that one size. But the manufacturers declined to make any but the ordinary sizes, and the order therefore went to Switzerland." Such progress from week to week augurs well. We would add as a further contribution to the D.R.'s education that English houses have been known to let an account run from two to four years, take no notice of reminders, refuse drafts, and then suddenly send a check in full without a word of explanation. There is "rot" as well as "dry rot." Our confrere was writing the former when he penned that paragraph on Canadian remittances.

#### They All Do It.

*Fibre and Fabric*, Boston; as a textile paper, stands in need of speck dyeing. The stock is excellent and the goods should be marketable enough, but the amount of foreign substances in the way of theology, politics and plain everyday fads that have got worked into the cloth, needs some correction. We are thus moved on seeing a short sermon on the ultimate good in a recent issue. In that discourse it appeared that he who had the highest good would never seek the counterfeit. Also that society punishes vindictively the crime of being found out. With this we agree and wish we were society, with a capital S, please, for we have found out *Fibre and Fabric*. In January THE CANADIAN JOURNAL OF FABRICS sent a representative to Almonte to write up the textile interests of that thriving town. In February *Fibre and Fabric* publishes practically the same material without giving any credit to us for several columns of matter. In future we should be pleased if our contemporary would give chapter and verse in its disquisitions.

#### Knowledge is Power.

By means of technical schools, Saxony has driven England not only out of Germany, but out of many houses in New York and South America, says an exchange. The English machines in her mills have been rapidly replaced by machines made at home. To-day in Saxony, a kingdom with 3,000,000 people, there are 1,243,905 spindles spinning cotton yarns—more than Bavaria has (Bavaria spun the first cotton yarn that was spun in Germany), and almost as many as there

are in Prussia. The average number in each mill now is 19,609, while in England the average is 29,506. Since 1887 the increase in spindles has been more than 20 per cent. These triumphs Germany owes to her technical schools. Without them she had never been able to get up. Take them away, and she goes to pieces. A manufacturer said only a short time ago: "Let the Government take its hand from behind the schools, and we manufacturers will support them. They are indispensable in helping us to keep what we have, and in enabling us to go out and get more."

#### Report on Sweating.

When the Dominion Government appointed A. W. Wright to investigate the condition of labor in the clothing trade of Canada, we pointed out the fact that a commission and a report could not be expected to cure the sweating evil. However, when we have the report in hand, there seems to be some ground for a contrary opinion, as there the difficulty is reported as not in existence. Many of the suggestions which will be found in another column are very valuable, and if carried out, would no doubt do much to elevate the people employed in this work. While the Canadian workers are not so badly off as their fellow-workers in London or New York, we must not get the idea that they are laboring under the best conditions, nor neglect the opportunity to improve their situation. At the same time, it must not be forgotten that legislation is not everything, and that there is a danger of over regulation as well as under regulation. We cannot recommend the adoption of all the measures that the commissioner suggests, but the thoughtful consideration of the situation by parliament and people will be a great benefit not only in the possible resulting regulation of the trade, but in the awakening of the public interest and watchfulness.

#### Southern Cotton Mills.

Cotton-mill building still goes on in the Southern States, and a large number of new mills are either being actually built or contemplated in Texas. The question is, how is all this boom in Southern cotton-mill building going to affect the Northern mills? The Northern manufacturers say they will leave the making of common fabrics to the Southerners and go into finer lines, but there will be a limit to even this diversity. Probably the day will soon come when manufacturers of some classes of American cottons, having completely overstocked the home market, will have to live on foreign markets or be swamped.

#### Make Your Goods Known.

There is not only honor in manufacturing a good article, but there is money in it too if you are known to do it. There is no better way to obtain credit for good work than by labelling any piece of goods in an unmistakable manner, and by registering the label make it impossible for others to trade upon your good reputation. The time may come when the man who does not label his goods will be thought to have excellent reasons for the course he adopts. Another Canadian firm has joined

the progressives. Brown & Wigle have registered a card with the words "Aue Saxony" and an appropriate device as a label for their blankets, which they are now offering to the trade in four qualities, through their selling agent, Geo. D. Ross.

## Textile Tendencies.

### Cotton Markets.

During the past month the condition of raw cotton has become steadily worse. There are 150,000 bales less cotton in sight than at the same time last year, yet the fact affords no comfort to operators. The fear of a big crop this season is acting powerfully against any improvement in prices. There is a general belief that planting is on a much larger scale this year, and that the planters were encouraged by recent prospects of advanced prices to go in extensively for fertilizing, which will of course increase the yield. The present price of middling cotton is 7½c., as against 5½c. in 1895, 7½c. in 1894 and 9½c. in 1893, at this period. The fall season trade in prints is now being done, and some remarks on the season's showing will be found in another column.

### Woolen Markets.

That prices are expected to go up, and business to improve in woolen goods, is quite evident from the lively competition which characterized the opening of the second series of the London wool sales on March 3rd. The advances which marked the last series were well maintained at the opening. Merinos and cross-breds advanced five per cent. the first day. The French and German buyers competed so keenly at those prices that there was a similar rise the next day, making ten per cent. advance in two days. The Yorkshire dealers bid with great spirit for coarse and lustrous cross-breds throughout the series. The Canadian trade has made little history in the past month—except the advance in the price of blankets made at a meeting of the manufacturers held in Toronto. The month of March has so far been a pleasant disappointment to the prophecies of those who thought that the fourth was to be a memorable occasion for many. Payments were in most cases fully up to the average and in some cases ahead of it. The feeling in the trade is distinctly better, in spite of the fact that small retail failures continue numerous.

### REPORT OF THE COMMISSIONER ON SWEATING.

It appears that the sweating system has not taken root in Canada; but conditions exist, says A. W. Wright, the commissioner, from which, without proper safeguards, evil may ensue. The trades enquired into were the clothing, fur, shirt, and necktie industries. In these, some manufacturers, though only a few, have all their work done in factories of their own. Some have their work done by contractors who have their own workshops; others give it out to people who make it

up in their own homes; while still others, and the greater number, have it done partly in all these ways. In Hamilton, for example, the greater part of the work is done by contractors, and the remainder by people who work at home. In Toronto, the same system prevails, though in that city the proportion of work done in private houses is greater. In Ottawa, Montreal and Quebec the contract system scarcely exists. He found six such shops in Montreal, and none in either of the other cities. In Montreal there are several of the manufacturers who have factories of their own, but in the three cities last named the greater part of the work is done by families in their homes. In Halifax, the proportion of factory work is greater, but there is a considerable quantity of goods made up in private houses. In all cases the goods are cut out on the premises of the wholesale manufacturers. Except in the ordered clothing trade, there is no agreement between employers and employees covering a period of time as to wages.

In other trades the prices are made by some one in the manufacturer's employ. Of this the commissioner says: "It seems to be almost inevitable that such a system must result in bringing down wages to the lowest point at which the employees can afford to work—to what economists have designated the bare subsistence point. This result is rendered the more certain by the fact that the separation of the workers, where they work in their own homes, and the want of combination among the contractors, prevent comparison by them of the prices offered. I find no evidence of any agreement, understanding or combination among the manufacturers for the purposes of regulating the prices to be paid for making goods, though in the way of business they usually keep themselves informed as to the prices paid by their competitors."

The commissioner adds that in no case did he find that manufacturers took any measures to keep themselves informed as to the condition of the shops or houses in which their goods are made up, either as to cleanliness or healthfulness. He adds: "I did not find anywhere shops that graded down to the level of the sweaters' dens described in the report of the commission of the English House of Lords; but I found not a few in which there was great room for improvement. The practice of using shops in which clothing is made as living and sleeping rooms does not prevail here, at least to any extent. When clothing is made in private houses, however, bedrooms and living rooms are frequently used as workrooms." This, the commissioner points out, might be a serious danger to public health unless steps were taken to guard against infection by inspection.

Only in Toronto did he find that ordered clothing is made under the contract system, and this was confined to trousers. The contract system, in his opinion, is not an evil. But it results in a positive gain for the employees by conserving and more profitably directing their labor, and so enabling them to earn more than they would otherwise. But, on the whole, his impres-

sion is that it would be a gain for employees if the factory system could be substituted for the contractors' shop system. He sums up this stage of the subject in these words: "As compared with the plan of factory work, I am of the opinion that the contract system does result in reducing wages, and in lowering the conditions of labor; but when the comparison is made between the second and home-work plan, I am satisfied that the contract system secures higher pay and better conditions of labor."

Mr. Wright finds that the sub-contracting system, the system under which the greatest evils and most deplorable conditions have developed in other countries, can scarcely be said to exist in Canada.

The establishment of a bureau of labor statistics, as is contemplated by the Act of 1890, is recommended, and that all information bearing upon the subject be gathered. He also suggests that the Factories Act be extended in order to regulate dwellings which are employed by the occupants for the purpose of making goods for sale. It is, in his opinion, necessary that there should be either a Dominion Factories Act, or that the provinces should co-operate to have uniformity of provisions and enforcement as regards this subject. Another suggestion made by the commissioner is that the labor bureau which he proposes should institute a system of labor registration, so that workmen might be kept informed as to where a demand exists for their services. To prevent the competition of aliens, he recommends that a Dominion law be enacted, prohibiting, under a sufficient penalty, the making of contracts in other countries for the performance of labor in Canada. To prevent industrial conflicts, the commissioner expresses the opinion that a Dominion Board of Mediation and Arbitration should be formed, which board should be a court of appeal from the findings of local voluntary Boards of Conciliation. For the purpose of assuring the payment of the wages of employees of contractors, Mr. Wright purposes that the wholesale manufacturer employing the contractor be made liable for the payment of wages due to persons manufacturing goods at the instance of the contractor. Another recommendation made by the commissioner is that goods made in tenement houses be labelled as such, as he thinks this would have a tendency to prevent the introduction of the sweating system.

#### CANADIAN PRINTS FOR FALL.

The fall trade is now on in prints, and, so far, promises no material difference from last season. Values appear the same, and, except for a five per cent. advance in moleskins, the price lists are practically the same as that of 1895.

The selling arrangement adopted by the cotton companies last autumn has proved on the whole not unsatisfactory to them, and will, we are told, be continued. The wholesale trade have not objected so much to the uniform selling prices and rebates as to the admission of certain retailers on the same terms as the

wholesale houses. This objection is to be removed, and manufacturers' agents assure the trade that they are not offering goods to the departmental stores for the autumn of 1896. It is expected that some firms which withdrew altogether from the Canadian market when the cotton company announced its terms last season, will return. Print samples are unusually complete this year. Large orders have been placed for Salisbury and fancy costume cloths. The designs are excellent, checks and small floral designs meeting with most favor; stripes are not in good request, while spots appear to be almost of the past. Black designs on a red ground are leaders. A year ago, fancy wrapperettes sold well, and promise to repeat their success this autumn. Patterns run to Paisley effects, while shades extend over a wide range. Plaids in imitation of a German cloth that has had a good sale here are shown in the new print samples. They are called tartans, but not even the most skilled genealogist in all Scotland could trace their pedigree or prove them the badge of a legitimate branch of any clan. The usual line of moleskins is shown, and orders are being placed for men's harvest shirts, boys' suitings, and other purposes for which it is used. Manufacturers are showing three different weights, while prices are  $\frac{1}{2}$  cent per yard in advance of last year's values. The trade were formerly supplied with moleskins of American make, but this trade is now almost exclusively in the hands of the Canadian manufacturer.

FOR THE CANADIAN JOURNAL OF FABRICS.

#### WORSTED FROM THE FLEECE TO THE CLOTH.

BY B. F. FALLS.

(Continued from last month.)

Previous to weaving the worsted cloth the yarns must be made into a warp for the loom. The first operation towards making a warp is spooling.

The formation of the patterns intended to be woven is effected at this point. The length of the warp and several minor affairs are also regulated. The spooling frame consists of a hollow drum set in a frame of iron, and made to revolve automatically. A wooden spool is placed on this drum, and the yarns run from the bobbin on to this spool as it revolves.

Dressing is the term applied to the operation of preparing the yarns for the looms. The spools, which have been filled by the spooling process, are arranged in a rack one above the other, and the threads of each are drawn into the reeds of the dressing machine. The threads of these spools are wound off and arranged in parallel order on a large reel, and from there on to the beam of the looms. We give a sectional view of the dressing frame in Fig. VIII.

A in Fig. VIII. represents a large hollow cylinder into which steam is introduced so as to dry the yarn which has absorbed sizing from the tank (I). B is another cylinder of the same kind. E marks the spools which contain the yarn. The yarn is wound from spools by the motion of the cylinders around which it passes. The yarn leaves the spools and passes into the tank I, in which is placed a liquid for hardening the surface of the yarns,

so as to make it weave readily. The object of the cylinders is to dry this sizing. The use of smaller roller *C* is to convey the yarn down into the tank *I*. The roller *D* presses out the surplus liquor and prepares the yarns for drying. After the yarn leaves the sizing tank it passes around the guide *G*, as shown in the illustration. The direction in which the yarn runs is indicated by the arrow. After the yarn passes through the reed *H*, it is wound on to the reed, and from the latter to the loom beam. Dressing yarns for the loom is a pro-

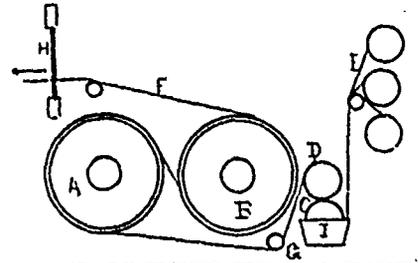


Fig. VIII

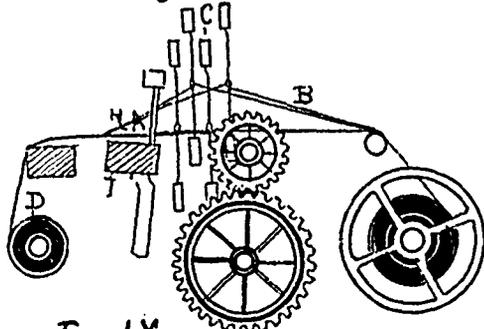


Fig IX



Fig. X

cess that calls for considerable skill, as the uniformity of a woven texture is largely dependent on the manner in which the yarn is dressed. This is particularly the case in connection with fine worsted goods. Sometimes it happens that a slight mishap in the dressing of a fine worsted warp will cause much trouble all through the following operations.

The art of combining two systems of threads is technically termed weaving. The two systems of yarns used in the operation are known as warp and filling; the former runs longitudinally through the goods and the latter transversely. In Fig. IX., *C* represents the harnesses which raise and depress the warp threads *B* for the formation of the shed *H*. Simultaneously with this motion the filling *A* enters and is beaten into position by the lay *I*. The woven fabric is indicated by *D*. These four motions represent the essential mechanical movements of the loom.

The shuttle is marked *A* in Fig. X. In order to show the interior the shuttle is cut off at the centre and the bobbin of the yarn *B* may be seen. The wooden part of the bobbin is designated by the letter *C*, the

yarn by *E*. When the top of the wooden bobbin becomes worn or split the thread *E* catches in the parts and breaks off, thus causing loss of time and waste. To overcome this in a measure some mill men put a small brass ring, *D*, around the top, as shown. This prevents breakage of the bobbin. The reed, Fig. XI., consists of two parallel rods *B*, into which is inserted the thin metallic pieces *A*, at uniform distance apart. The parallel rods are made of wood and wound with tar twine. The reed serves to keep the yarns separate during the weaving process, and to beat the filling into position. The spaces between the metallic pieces are termed "dents" or "splits." The use of the harnesses of the loom is to raise and depress the threads of the nap. A view of one is shown in Fig. XII.

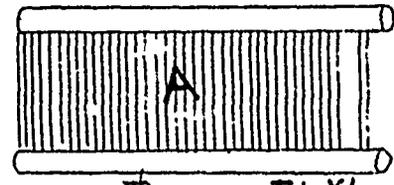


Fig XI

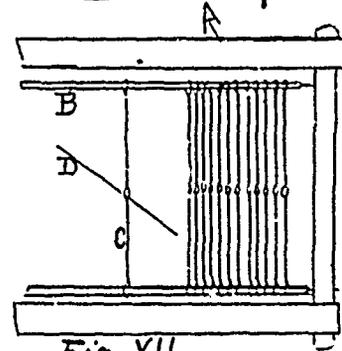


Fig. XII

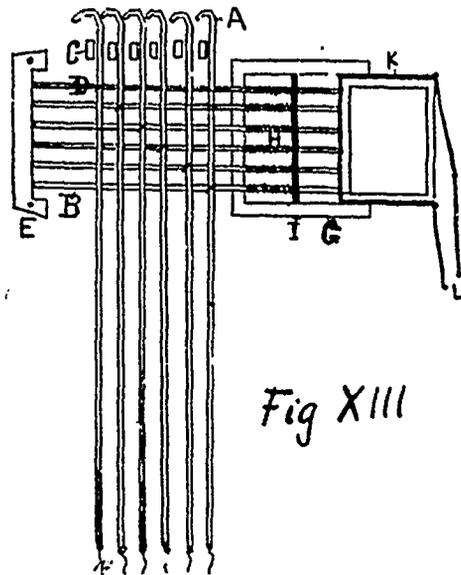


Fig XIII

The harness consists of the wooden slat *A*, the steel rods *B*, and the wire heddles *C*. They are made very strong so as to resist the constant strain to which they are put by the continual pulling and hauling of straps attached to them during the weaving process. They must rise and fall at every pick of the loom. They are in motion from the time the loom starts until it stops.

The pieces *A* are less than one-half inch in thickness, so that from two to forty harnesses can be used in the wide range fatcy worsted loom. The threads of the warp are drawn into the "eyes" *D*, as shown in the sketch. This is done by two hands, who draw in from 5,000 to 6,000 ends per day. Great skill is needed to do this work, as every pattern, unless it be a straight draw, is more or less complicated.

The jacquard machine is in reality an attachment, and is used in the weaving of figured worsted goods. The mechanism for throwing the shuttle, the movement of the lay, and the general arrangement of the loom is such that the resemblance is very close to the common kind. Although the loom itself does not differ in construction from the regular loom, the head-motion is entirely different. Fig. XIII. illustrates the head motion of the Jacquard loom. *A* in the above view shows the upright wires, the top portions of which are formed in the shape of hooks. The lower ends of these wires are furnished with small holes, through which the harness strings *P* are put and secured. The hook ends of these wires rest above the knives *C*, the ends of which may be seen in the figure. A crank contrivance, which is operated from the loom, is attached to these knives, and an up-and-down motion is given to them. They make this motion once for each revolution of the loom. Should the knives rise when the hooks are in the position shown in the sketch, each of the wires would be lifted, carrying the harness strings with him. Whatever warp yarns are in these strings will rise too, and the shuttle will pass below them. Only a single series of hooks are shown in the illustration, but there are from 200 to 1,000 used in practice. If, however, the hooks were to remain in the one position, nothing would result. It is here that the ingenuity of the Jacquard attachment is displayed. The cylinder *K* is a square-shaped arrangement, extending the full length of the head-motion, and comes in contact with each of the cross-wires *B*, the technical name of which is "needles." A series of cards *L*, securely fastened together, is the agency by which the needles are made to adjust the upright wires, according to the requirement of the pattern. The cards are made the same size as the cylinder sides, so that they can work well together. These cards are about one-half holes and one-half blanks. They manipulate the needles. A mechanical device causes the cylinder *K* to move forward against the heads of the needles *B*, which it does at every pick of the loom. All the blank spaces in the card causes the needles to move forward, thus bringing the hooks of the upright wires over the knives. The needles and upright wires are connected at the points *D*. The holes produce the opposite effect, for the ends of the needles slip through and the hooks are not brought into contact with the knives and so remain depressed. The above plan represents the relative position of the part when all blank spaces are presented on the card. The moment the cylinder returns the springs *H*, which are held in position by the pin *I*

in the frame, cause the needles to move back and clear the knives. The piece *E* is a support.

(To be concluded in our next issue.)

#### ROPE AND TWINE MAKING.

The manufacture of rope and twine has been carried on in all ages, since primitive man first felt the need of raising a weight or securing the parts of a weapon. The old-fashioned process of manufacture as carried on in the rope walks is a thing of the past; machinery and centralization have produced numerous changes in this as in most other industries. The demand for rope has not grown very rapidly in recent years, owing, no doubt, to falling off in the number of sailing ships, but the demand for twine has enormously increased. The self-binding harvesting machinery in the United States in 1895 took up 150,000,000 lbs. twine, which serves to show to what proportions this industry has grown. The demand for a number of different cords is constant, as that for fishing-lines, nets, etc.

The fibre which is used is hemp of various kinds, and is derived from a number of plants. Manilla is obtained from a wild plaintain, and the fibre is of great length and strength, although somewhat intractable. Sisal hemp is obtained from the aloe, while Russian and Italian is the product of an annual which is specially cultivated. Italian hemp has the finest and best fibre. There are a large number of fibres which it is clear will ere long be brought commercially into use, and New Zealand flax and coir are already employed in the manufacture of ropes. It is, perhaps, the most notable feature of the present day that the efforts to utilize all available materials are persistent, and do not slacken even in the face of enormous difficulties. At the same time, in an industry such as this, there are certain well-defined sources of supply, which are drawn upon so long as it is not clearly proved that others are available. This is obviously the prudent course to take. There is just one point to which attention may be directed. Rope making is essentially the art of utilizing the fibre in its full dimensions, it being necessary to obtain the whole advantage from the great strength of the unbroken fibre. This is also the case in producing binder twine. Twine making, on the other hand, utilizes the tow or short fibre, being much more of the character of spinning, it being obvious that the necessarily great reduction of the diameter of the slivers naturally modifies the character of the operation. It may thus be said that, in one sense, the process is either one direct from the fibre, or an indirect one by the utilization of the short fibre.

The length of the fibres which are used in the direct process of making either rope or twine demands that the method of reducing them to order shall be the work of successive combs or heckles. Carding is quite out of the question for some kinds of hemp, and the machines which are used are therefore constructed on the moving gill principle, which also finds employment in woolen spinning.

In preparing the manilla for rope it is first gilled

and then run through a combined spreading and drawing machine, which consists of two chains of gills, the one acting as a spreader and receiving the material from a lattice at the end, and the other, having finer pitched teeth, acting as the drawing chain. On leaving the drawing chain the fibre passes between two weighted rollers, and is then collected prior to being passed through another set of calender rollers, from which it emerges in the form of a flat band or sliver. Several of the slivers so obtained are then passed through a second machine of the same type, and still further drawn, the finishing process of drawing being the work of a screw gill machine. In spinning the sliver is fed by means of a chain of gills and delivered to a trumpet-mouthed receiver which collects it, and by which it is guided round small rollers to the edge of the flyers.

All rope-making machines are substantially based upon the same mechanical principle, which is that of causing the frames holding the yarn to rotate round a central point. The machine may be constructed not merely to twist up single ends, but to duplicate or multiply each end, which is finally twisted. Thus a three-stranded rope may be made, and each strand be composed of six smaller ones drawn from bobbins fixed in the revolving heads shown. Each of the heads rotate so as to twist the two strands together, and the doubled strand emerges from an eye, whence it passes to the central collecting eye of the spinning part of the machine. Thus the flyers carrying each of the strands receive an independent axial rotation, and concurrently there goes on the final twisting caused by the rotation of the frame carrying the receiving bobbin.

The manufacture of twine proceeds upon somewhat different lines, except in so far as binder twine is concerned. That follows the course described and terminates at the first twisting machine. In the numerous small twines the system is almost entirely different, and much more nearly resembles the methods followed in the manufacture of doubled yarn of other materials. Twines of other varieties can be spun either from hemp or tow. Russian hemp is heckled either by hand or by a machine similar to that used for flax. A double drawing then takes place, by which the hemp is formed into a sliver ready for spinning. Another method of manufacture followed is that of making the slivers from tow or short fibres. In this class, the hemp is fed into softening machines, which consist of a large central cylinder surmounted with a series of fluted rollers, to which an intermittent backward and forward rotation is given, so as to cause them to break up or soften the fibre. These machines provide the raw material for the carding engines, by means of which it is submitted to the action of the usual series of rollers, and eventually delivered as a sliver. The latter is laid in cans, and these are drawn or prepared into a size suitable for twisting by means of screw gill machines, there being three passages through the drawing machine. The drawn sliver is then passed to the roving machine, which by means of screw heckles, draw rollers, and flyers, roughly twists it up into a thread. The

finer twines are all spun on flyer frames. There is yet another stage to note prior to following the twine into the final process of making up. Some rope or twine yarns have to be tarred for preservative purposes. After being spun, therefore, the yarn is formed into a warp and is then fed through a tank containing boiling tar. A pair of squeezing rollers removes the excess of tar, and the yarn is then wound on to bobbins. In this state, after drying, it is in a condition to be twisted up into ropes. The operation of balling is effected in the usual way by the oscillation of a revolving mandril within a rotating flyer, through the eye of which the material is passed.

#### THE HAND LOOMS OF FRANCE.

Canadians are so accustomed to the idea of manufacturing being carried on in large buildings that they will hardly credit the fact that in many countries factories have no necessary connection with the textile industries. At one time the famous cloths of England were all made in the homes of the weavers, scattered as they were over a large area about the textile centre where the yarn was procured and the woven cloth disposed of. The advent of the power looms wiped out this system of home manufacture and caused those changes in business methods which are commonly spoken of by students of commerce as the Industrial Revolution.

While the change referred to has been completed long ago in most cases, it is interesting to note that the silk manufacturing of France is still in the household stage to a very great extent. Lyons, which is the second city in France in population and the greatest manufacturing centre, is a disappointment to the visitor who looks for some outward sign in the way of tall chimneys and large workshops of one of the world's most famous industries. Nothing of the kind is visible, however, and the nearest approach to it is a row of substantial stone office buildings on the river front, which employ hardly five hundred men altogether. These are the warerooms and offices of the silk manufacturers, whose goods are all woven in the tenement houses of the town and the surrounding villages.

The hill part of Lyons is covered with large stone tenement houses. In the window of nearly every room a hand loom is at work. There are 20,000 of these hand looms in Lyons. They are owned by the workmen, and all the fine goods are made by hand. There are factories using power looms, but they are located in the surrounding country, generally in isolated places, where water-power can be had and labor employed at the lowest possible rates. It is necessary to have a good light to make the fine silk goods, hence the tenements used for this purpose are built on the hill sides. Some of these houses were occupied by as many as forty families. Three rooms, and generally two, are all that one family rents, and one of these rooms is taken up with the ponderous wooden loom. The manufacturer, who sells his goods usually in advance, delivers the materials and designs to the weaver

to be woven at a rate per metre, and all incidental expenses fall upon the weaver. There is nothing to fear from strikes, and when the manufacturer finds business dull he closes his office. He has no plant lying idle, and no permanent salaries running on, and so all losses fall upon the weaver.

The people of Lyons know the value to them of their pre-eminence in the silk trade, and they lose no opportunity to maintain it. They no longer admit foreigners to the schools where designing and weaving are taught. That is, of course, only fair, as these schools are maintained at public expense, for the benefit of French workmen. There is a municipal weaving school where from 75 to 100 pupils are taught in the day time, and about 500 at night. Then there is a designing school to which the manufacturers send their sons to learn how to design patterns. The best teachers are employed, and these schools are of great advantage. The Chamber of Commerce grants cash prizes to workmen who make improvements of general interest, and in other ways measures are taken to improve and maintain efficiency in the industry, which is the very life of the city.

#### THE AUSTRALIAN WOOL MARKET.

A summary of the Australian wool market, published by Fuhrmann & Co., Ltd., of Melbourne and Sydney, gives some interesting points to the trade:

"The selection offered in the Melbourne and Geelong markets during December did not equal the excellent display shown during the previous month. However, the keenest demand from both the continent of Europe and the United States continued unabated until the 17th December, when the public sales closed here for the usual Christmas recess. Prices early in December had been gradually firming, and towards the second week of the same month the hardening tendency showed fuller development, and a rise of  $\frac{1}{4}$ d. to  $\frac{1}{2}$ d. was noticeable, particularly for all good to superior wools. Greasy crossbreds and all sorts of scoureds shared in the general improvement, but the former did not maintain their favorable position, and some irregularity crept in during the last days before Christmas. When business was resumed here on the 8th January, prices all round showed little change, as against December closing rates. The slight hesitation that reigned the first day, owing to possible political complications in Europe, soon gave way to a renewed strong demand from the continental section, which throughout the whole season has given the main support to our market. Yorkshire representatives, too, and American buyers showed more eagerness to secure suitable lots, and the last sales went off with high spirit and at prices which showed an average rise of  $\frac{1}{4}$ d. per lb. on December closing rates. Our stocks have now been reduced to such an extent that the public auctions will be discontinued until the last week of January. This season will virtually close about a month earlier than last year's, and compared with the corresponding period of 1894-1895, the sales in

our colonial markets show an increase of about 39,000 bales, as will be seen from the table hereafter:

	1893-96.		1894-95.	
	Offered. Bales.	Sold. Bales.	Offered. Bales.	Sold. Bales.
Melbourne-Geelong ..	325,000	297,000	345,600	299,300
Sydney.....	400,000	354,000	405,200	328,100
Adelaide .....	90,000	79,500	80,400	64,000
	815,000	730,500	831,200	691,400

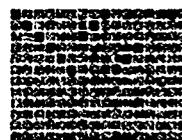
Hitherto, owing to the earliness of the season, the statement that there would be a serious shortage in the clip has to a certain extent been contradicted by the increase in bales actually exported, which, as recently as at the end of December, still amounted to about 12,000 bales. According to the latest statistics this increase has now given place to a decrease in exports of about 77,500 bales. The deficit is predominant in New South Wales, Queensland and New Zealand. We hear of very little wool being held in the country, and we have not the slightest doubt that the decrease will rapidly become more pronounced, reaching by the end of June our previous estimate of 150,000 to 175,000 bales.

## Textile Design

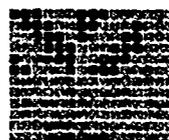
#### WORSTED SUITINGS.



DESIGN.



DRAFT.



WEAVE.

Warp, two 28's.  
Six threads light brown.  
Six threads dark brown.  
Weft the same as warp.  
60 picks per inch.

#### DIAMINOGENE EXTRA AND B.

The formation of blue and black azo colors on the fibre of cotton by diazotising and developing Diamine Blacks, offers, as is well-known, special advantages such as safe and simple working, the fixing of the color fast to washing and acids, as well as maintaining the softness and the strength of the fibre. Diaminogene Extra is a new Diamine Black, which when developed, possesses besides the above-mentioned properties and an especially beautiful deep shade, a greater fastness to light than has been obtained with other black dyestuffs. Developed with Developer No. 1, it gives beautiful blue black shades, with Fast-Blue Developer AD dark blues. Dyeings done with this color and exposed simultaneously with Indigo dyeings of equal depth, have proved not only fully up to the latter, but even slightly superior. Just as good is the greenish-black obtained with Developer No. 2 and the blue black produced with Developer No. 5. The fastness to washing and acids of such dyeings is also excellent. They blend so little on the white washed together with them that it will in no way impair the use of Diaminogene for any purpose. It is dyed in the usual manner by first boiling with the addition of 2 per cent. soda and 20 per cent. Glaubers salt for one hour, and then diazotising and developing as indicated in our circular describing these processes. Another somewhat cheaper mark of the same group of dyestuffs is Diaminogene B, pat. Although the developed colors obtained with Diaminogene B are not quite as fast to light as those done with Diaminogene extra, they still are superior in this respect to other similar colors produced on the fibre. In fastness to washing and acids, they are fully equal to

those produced with Diaminogene extra. The difference between the two marks in fastness to light is, of course, more noticeable in light shades than in dark ones. For fast blues, it is best to use Diaminogene extra, and for blacks, the cheaper Diaminogene B; the two products are principally recommended for the following purposes:

**Yarns for Weaving.**—For the production of blue and bluish black shades Diaminogene extra and B developed with either Developer No. 1, Naphtylamine-Ether N or Fast-Blue-Developer AD; for deep blacks Diaminogene B developed with Developer No. 5. In severe washings such dyeings do not change their shade, and only very slightly tint white yarn washed together with the same. The fastness to light will suffice in all cases, but not the fastness to chloring. On cotton and linen twists and yarns, besides their good fastness to washing and to light, these dyestuffs have the advantage of well penetrating the fibre. On hosiery, underwear and knit goods, for the various dark blues, both products are recommended, and especially Diaminogene B for blacks. The black obtained by developing Diaminogene B with Developer No. 5, or still better, with equal parts of this and Developer No. 1, shows a great depth of shade, and can in beauty well compete with Aniline Black. Besides its great fastness to light, washing and perspiration, this black does not in the least weaken the fibre, and goods manufactured from yarns dyed in this way are far superior in durability to those dyed with Aniline Black. They also do not alter their shade in storing. For cops, slubbing and loose cotton the new dyestuffs will be useful, where their shades and fastness offer advantages. For piece goods both marks are of interest, owing to their fastness to light. Diaminogene B, developed with equal parts of Developer No. 5 and Developer No. 1, and, if necessary, topped with some New-Methylene-Blue G B, will yield a black in depth and shade nearly equal to Aniline Black, and costing less than the latter, owing to the more simple application. Dyeings developed with Beta-Naphthol can be discharged white with zinc dust, whilst, if other developers are used, a white discharge is not so easily obtained. Colored discharges can in all cases very easily be produced with tin salts. Also, for velveteens, these dyestuffs will be of interest, owing to their great tinctorial power and their fastness to light. For linens and duck, as well as for other thick fabrics used for tents, suits, etc., the property to well penetrate the tissues as well as the great fastness render them useful.

#### BELTING: THEORY AND RULES.

In the matter of belts and belting, as in every other affair of human interest, the old saying about doctors differing is quotable. Rules vary greatly according as the engineer wishes to give a greater or less factor of safety. To show how these rules vary, Haswell gives a rule that for certain work would require a belt 42 inches wide. For the same work Unwin gave 39.3 inches, Arnold 39.8. Nystion 21.7, Reulcaux 18 inches, and Webber 25 inches. Now, there is a great difference between a belt 18 inches wide and one 42 inches wide, on the score of convenience, cost, cost of pulleys, etc., and these call for a rule that will give us the narrowest belt that will do the work with safety, and without too much strain upon the belt. "I am going to give you the rules that have been proved by long observation to be proper," said Thos. Hawley, in a lecture before the Wells Memorial Institute, Boston, "and give a few principles of belting that may help make the rules clearer.

"If you ask one man what to do if a certain belt failed to do its work and slipped a great deal, he would say, lace it; and another might say, put on resin or belt dressing; another, put on a binder-pulley; and another might say, increase the width of the belt; and another, put on a double belt; and another, increase the diameter of the pulley. Here are a variety of plans. Tightening the belt will increase its tension and the pressure of the belt on the pulley; belt dressings will not increase this pressure a particle, but some will increase its adhesiveness or friction. There is a distinction, you see. The binder will increase the arc of contact of the belt on the pulley, and this would be efficacious, but increasing the width of the belt with the same total tension would make no difference nor would the double belt help it any.

"The first plan is tightening the belt. Many engineers have puzzled over why a belt drives by simply wrapping it over a pulley. It has been said it was because the air was expelled from beneath the belt as it lapped over the pulley, and the pressure of the atmosphere upon the belt fastened it to the pulley. Others have attributed to the belt a rough surface, and to the pulley minute rough places, that make it correspond to gears with teeth so small they cannot be seen, but their effect can be observed. This will not answer, either. It is simply pressure and friction. Lay a block of iron on a table and it resists being moved, and you know why—friction. Throw a belt over a pulley and on the other end hitch a weight. The belt resists when you pull; it is friction again, and this is something apart from the sticky quality that a belt dressing gives. If you put oil under your block of iron it moves easier; and if you put oil under your belt it will slip easier. Here is another factor—the absence of freedom that one substance slides on another—and this is called the co-efficient of friction. Now a co-efficient is simply a quotient, and in this case is simply a number that is determined upon by experiment, and shows the relation the surfaces bear to the weight pressing them. Thus if a block of iron was laid on the table it would require a certain amount of force to drag it along the table, but if the table was oiled and the same block put on, it would require less force to start it. The proportion that this force bore to the weight would be called the co-efficient of friction, and multiplying the weight by the co-efficient will give the force to overcome the friction. The lower the co-efficient of friction is, then, the easier it will be to drag an object, and the less the friction. Friction depends on pressure, not extent of surface, and the block may be set up edgewise, but its weight being the same the friction will not change. The force with which one surface presses upon another surface varies with the weight, however, or pressure of the pressing surface, and the friction will be this pressure or weight times the co-efficient of friction. With a block we have a simple weight pressing downward. With a belt the weight is obtained by the tension or pull of the belt, which does not act flat on the pulley face, but pulls at a tangent. I have compared centrifugal force to a boiler pressure and its bursting strain, and we can with this. Where in a boiler pressure acts outward, and the strain tending to burst, an inch wide ring of the boiler is the boiler pressure times the radius, with the belt it is the same, except it is reversed, that the pressure acts toward the centre instead of from it. The tension of the belt is the bursting strain, and the radius of the pulley answers for the radius of the boiler. Then the pressure must be the tension divided by radius.

Take, for instance, a boiler with a diameter of forty inches and a pressure of sixty pounds. If we should take the bottom half away and substitute a plate for it, the pressure down would be equal to that pushing up, so that the diameter times the steam pressure would be the total strain on an inch strip. The strain on one side would be one-half, or the pressure times the radius as tending to burst the boiler. This would be  $60 \times 20 = 1,200$  pounds. With the belt it is reversed, and if you consider the pull on the belt as the bursting strain, and the radius of pulley is taken the same, to find the pressure then divide the strain by the radius  $1,200 \div 20 = 60$ , which is the weight pressing radially toward the centre. This means that if you divide the strain on a belt (its tension) by the radius (half the diameter of the pulley), the quotient is the effect this pull has, and is just the same as though it was an equal weight or pressure laid flat on the belt at this point. This is what holds a belt to the pulley and causes it to drive, and this amount multiplied by the co-efficient of friction causes the belt to adhere to the pulley and it will vary with this co-efficient of friction. Some authorities give this co-efficient of friction as .5, some .2. Morin gives .28. Towne and Briggs, .42; Rankin, .16, and Lanza, .27. It is simply that the pull, or tension, of the belt acts downward on the pulley and presses the pulley with a pressure equal to the tension divided by the radius of pulley, and that the belt does not slip will then depend upon its co-efficient of friction. Leather-covered pulleys give a larger co-efficient than simple cast iron, it makes very little difference whether the belt is new or old, or whether the pulley is smooth or rough, but a wet belt gave much better results than the

samo belt dry, driving one-tenth more. The co-efficient of friction was higher on wooden pulleys than iron.

All other conditions being alike, the higher the co-efficient of friction the more a belt will drive. It has been shown the wooden pulley is the best, the leather-covered next, and the iron pulley last, that it made no difference whether the pulley was rough or smooth, or the belt old or new, but a trifle of gain came with a wet belt. Vulcanized rubber belts showed about the same as leather over leather-covered pulleys. The use of a belt dressing increases this co-efficient of friction. These facts being so, the driving power of a belt on a certain arc of contact can only be increased by giving the belt more tension, which will, of course, increase the pressure downward on the pulley, or by increasing its gripping power by some preparation. You can see that a wider belt with the same total tension would not help a particle, nor would having a double belt without increased tension help it any. Where these would help would be in enabling you to tighten the belt more without passing a safe limit. If you had a single belt six inches wide and it would just slip at the load, if it was an eight or ten-inch belt under the same total tension, it would slip just the same. But suppose you had a tension on the six-inch belt as much as it would bear, and then it slipped, with the eight-inch or ten-inch belt, or the double belt, you could increase the tension further, and so get the increase in driving force from this increased tension.

So it is a law of belting, and follows that the friction or grip of a belt is the same for the same angle and the same total tension whatever may be the width of the belt, that the friction of a belt is independent of the width of the belt.

The friction or grip of a belt depends upon the pressure, or tightening of the belt, whichever you care to call it, and upon the angle of contact; that it is independent of the diameter of the pulley, and independent of the width or thickness of the belt. The width and thickness simply give opportunity to make a belt tighter without too much strain. The above being so, it follows that the smaller the angle of contact is, the greater must be the strain placed upon a belt to transmit a certain amount of force. The driving power of the belt with a given tension will vary almost as the square roots of the arcs of contact. This is not a positive rule, but an approximation that any engineer may find of use. Thus, if you found that with a certain belt contact, say, 90°, you transmitted 20-horse power at 600 feet per minute, and wished to know what gain there would be by putting on a binder that will give an arc of 135°, you would follow this rule. Multiply the horse-power by the square root of the arc of contact desired, and divide by the square root of the present arc of contact. In this case, the square root of 90 is 9.48, and of 135 is 11.68, and horse-power 20; so by the rule,  $\frac{20 \times 11.68}{9.48} = 25.6$ -horse power

You will understand that power is the product of force and speed. A little emery wheel running 3,000 feet per minute, with a little belt pulling ten pounds only, gives  $10 \times 3,000 = 30,000$  foot pounds of energy, and requires as much power as a big machine requiring a belt eight inches wide, with a pull of 300 pounds, but running only 100 feet a minute. For a certain power, then, an increase of force is necessary when you decrease the speed, or an increase of speed requires less force to produce for a certain power. You can see if you had a belt wrapped around the two shafts that such a belt must be a very wide one to hold the strain necessary to do a certain amount of work, and if the pulleys on these shafts were but six inches in diameter each, a wide belt would also be necessary. Now make the pulleys twelve inches in diameter, and the belt must be only half as wide or half as strong as with the six-inch pulley. Make the pulley six feet in diameter and you can imagine that you will need a very small belt, and a very light tension on that belt. We have not violated any of our principles here, for we are simply working at a greater leverage, and on the principle of the lever, the longer the long arm of the lever the less moving force is necessary. There are, then, two ways of driving a pulley; one is by a small pulley, large belt, and consequently high strain on the belt, and the other is by large pulleys

and small strain on the belts. Now, the heavy strain on a belt means journal friction and a slipping belt. If there is any economy in coal, by the different use of belts it must be here, that, with large pulleys and light strain, the friction of shafting in boxes will be less and a less loss in slipping. It is most economical, then, to make belt speeds as high as possible within reasonable limits, say 3,000 to 5,000 feet per minute.

High speeds also permit of the use of single belts as against double belts. A belt properly designed for its work, and occasionally oiled to keep it pliable, should last for a great many years, but the practice is to drive the belt too hard. The limit of strength should never be exceeded. The strength of a belt varies from 2,500 pounds per sectional inch to over 6,000 pounds. If we take the lowest of these, 2,500 pounds, a belt a quarter of an inch thick will have a strength of but 625 pounds an inch in width. Allow a factor of safety of ten and it comes down to sixty-two pounds an inch in width. The accepted good practice is to allow a belt to have a strain of but fifty pounds per inch as the highest, and there ought to be taken into account the fact that the belt holes weaken a belt, and that the tightening of the belt also adds strain. The belt is under tension when at rest, and the load driven is additional tension, so that a strain of fifty pounds on each inch in width is the most that should be applied. It is easy on this basis to establish a rule for belting that can be used in all directions. You must know the work that you want to do with the belt in foot pounds, and to find this multiply the horse power by 33,000. Ten-horse power gives  $10 \times 33,000 = 330,000$  foot pounds. If you wish to drive this at 3,000 lineal feet per minute, which is the speed the pulley rim will run, it will require  $330,000 \div 3,000 = 110$  pounds strain, and the belt width  $110 \div 50 = 2.2$  inches. This will vary in practice because the engineer, generally, cannot choose so high a speed to run. To find the width of a belt to drive a certain power, then, divide the foot pounds by the speed in feet at which the belt is to run, and this quotient by 50.

To get the speed in feet per minute of the belt multiply the circumference of the pulley in feet by the revolutions per minute. To reverse the operation and find the horse power a belt will transmit, multiply together the constant, 50, the width of the belt in inches, circumference of pulley in feet and revolutions per minute, and divide by 33,000.

Double belts should not be used when single ones will do the work. A wide single belt will last much longer. If you undertake to make a double belt of two single belts, riveting them together, you will find how quickly they will tear the rivets out. The same action goes on always in a double belt, but they are secured together so well you do not observe it. The outer belt must travel over a larger distance around the pulley, and it cannot do this without internal strains that will quickly destroy the belt unless very loosely laced. Where one belt is to be placed over another, it is much better not to fasten them together. The addition of a belt, or substituting a thicker belt, will not increase the friction except the tension is increased. The slipping of a belt shows poor engineering. It indicates an overloaded belt, and should never be permitted more than 2 per cent. Tightening the belt will help, but if it does not, a wider belt is the remedy. Slipping produces heat, which weakens the leather.

The hair side of a belt should always be next the pulley. Crossed belts give the best results in driving, because of the increase of the arc of contact. The belt rubbing in passing at the cross would take from this efficiency, but with pulleys of equal or nearly equal diameter this friction amounts to nothing.

To measure belting in a roll, add the diameter of the hole in inches to the diameter of the roll, multiply by number of turns of belt, and this product by .1309. The result is length of belt in feet; or, add the circumference in feet of hole and roll together, divide by two and multiply by number of turns in roll.

A fire broke out in H. Macdonald's furniture and carpet store, on King street, Chatham, Ontario, February 13th, but was checked, with damages of only \$1,500 to the stock and \$250 on the building. Both insured.

## Foreign Textile Centres

**MANCHESTER.**—America does not appear as yet anxious to force prices upwards, although that such an attempt will be made when the right moment arrives is a foregone conclusion. There is not much doing for India, although in some cases, dhootie manufacturers ask four and even five months ahead for delivery. In other quarters, however, the goods can be obtained promptly enough. Calcutta has asked for dhooties freely, but the limit has been too low. In the Burnley district more looms are idle, and in the spinning trade several balance-sheets for the past quarter show losses. At Blackburn recently, a significant auction took place in which a 30,000-spindle stone cotton mill, in good repair, with modern machinery, and eleven valuable cottages attached, was knocked down for less money than a public-house. Reference has on several occasions been made in these reports to the increased demand for Egyptian cotton on the part of American spinners. The development of the United States trade in the direction of finer counts is a matter of very great interest to Lancashire, where the logical sequence of Southern competition in coarse counts with the Northern mills has long been perceived. A mail report from Alexandria, dated the 7th inst., shows that from September 1st to that date the United States took 41,856 bales of Egyptian cotton, against 29,891 bales during the corresponding period of 1894, and 9,704 bales the year before. This indicates a much larger consumption of Egyptian cotton than usual, and bears testimony to the continued efforts of Americans to increase their output of the finer classes of cotton goods. That there is room for enormous expansion in this direction is shown by the fact that English takings this season amount to 253,974 bales, against only 41,856 bales for the States. The average weight of the Egyptian bale is about 750 pounds. Ten years ago it was only 675, the tendency having since been in the direction of an increase. The effect may not be shown for some time to come; but eventually shippers of the finer Glasgow and Manchester cotton goods must be influenced by any extended development of the better end of the American cotton industry.

**BRADFORD.**—There is still a deal of hesitation amongst buyers in the wool market, and although the general tone is somewhat more hopeful, very little actual progress can be reported. The quietness in both fine and medium colonial wools can be accounted for to some extent by the fact that a new series of London sales opens March 3rd, and as trade has been dull since the conclusion of the last series, there is some uncertainty as to whether the extreme prices of the last sales will be fully upheld. A good deal of spirit was imported into the last sales by the competition of the Americans for the finer classes of wools, and as a considerable proportion of their purchases were believed to have been made in fear of a renewed imposition of the duties on wool, it is not expected that their requirements for actual consumption will be large, or that their competition will be so keen at the forthcoming sales. However, I am told by several of the largest Bradford buyers that as several of them came away very short of wool last time, there is very little prospect of prices being easier. There is very little new business in either low cross-bred or English wools, but the holders of pure lustre wools are holding with more confidence than formerly. Mohair has again advanced, and the very small amount of material remaining in Constantinople and the Cape places holders here in a strong position. Although new business in alpaca is not nearly equal to that in mohair, prices are distinctly advancing, and we are now nearing the time of year when business may be expected in alpaca serge linings. Business from the Continent in worsted yarns shows so little improvement that spinners who are running short of particulars are now open to make concessions to obtain work. Spinners of serge and fancy yarns are very firm in their quotations, however, and there is more inquiry for mohair yarns, both for the home and export trade. There is some talk of conciliations for the American market in piece goods, both for coatings and dress goods. Orders for the former have already been stopped in cases where the higher rates were charged and where deliveries are behind-hand.

The fall in prices is sure to induce some cancelling and even Americans cannot be expected to wait for ever for their goods. In the ordinary way dress goods for the American market should be on the other side of the Atlantic by the end of February, in order to be ready for the spring sales. The general home trade is also disappointing, though it should be borne in mind that with the unusually large orders placed in the autumn for the spring, it is only natural that retailers should hold off, for a time at least, until they see how the season opens out. The rise in mohair and bright material precludes any possibility of cheaper prices, and the return of expensive and elaborate crepons to high favor shows that the fashionable world still favors lustrous fabrics. Another indication of the continued feeling in favor of bright goods may be found in the revived inquiry for moreens for skirting purposes. I am told by makers of high-class fancies for winter dresses that the season is opening up very well, and that they are selling new styles in these goods freely. Bradford is now producing more expensive and stylish goods of this kind than formerly. The taste for smart costume cloths in bright mixture effects is growing, and it is expected that these goods will be quite a leading feature for next autumn. The local provident fund of the Bradford Commercial Travellers' Association, which was established about two years ago for the purpose of helping travellers who have encountered misfortune, was assisted by a concert given on Friday last. A Bradford gentleman has promised a donation of 10 per cent. on any sum raised up to £1,000.

**LEEDS.**—In the clothing trade there is a quieter feeling, and it is supposed that the colder weather and stocktaking amongst the retailers are somewhat interfering with spring business. Factories continue to be well employed, and are, in some instances, actually short of hands. Although the American trade in worsted coatings shows little improvement, there is more doing for Canada and the colonies. In the heavy woolen district business continues fairly active, although some rather important firms are letting, some of their machinery remain idle on account of the cutting in prices and the falling off in business to the United States.

**HUDDERSFIELD.**—In Huddersfield there is a quieter feeling, but medium and cheap clothing fancies are selling well for the home trade and the colonies, and good fancy worsteds are in demand.

**KIDDERMINSTER.**—The looms are perhaps not now quite so urgently employed, but the delivery of goods made in the closing weeks of the year is rather large. The demand for Brussels continues to improve, and there is a tone of firmness. Spinners maintain their prices, and the yarn market points to an advance. Should the stiffening process continue an advance in the price of carpets is inevitable. The Worcester Cross Carpet Co. seems to be starting with everything in its favor. The works are in perfect order and contain 42 looms with all necessary machinery, as well as designs, cards, plants, standard colors, bobbins, and last, but not least, a fine business connection. The price to be paid is a little over \$5,000, and the property could not be replaced for \$20,000. Most works are equipped at a cost of from £500 to £800 per loom; the present investment will be more nearly £200 per loom. The concern has hitherto been worked at a profit, at all times when a profit was being made in the carpet trade; and, without entering into the subject of the causes of the recent stoppage, it is quite clear the re-start will be now made under most favorable conditions. H. R. Willis' commercial ability and integrity are well known. His two sons have approved themselves competent men of business. The expenses of management will be over a thousand pounds per annum less than formerly; and the workmen, all men of proved skill, will resume their places in a new character, that of shareholders in the concern, and with every inducement to see to it that no waste or damage takes place. The local tradesmen will rejoice to see the works again in full blast, as it means £10,000 a year in direct weekly cash payments for wages and salaries for circulation in the town. That this may reasonably be expected to be realized again is proved by the general and steady revival of the carpet trade. Everything tends to show that having passed through

a period of extreme depression, this trade is now entering into one of the more prosperous periods of the recurring cycle. The despondency that rested on the town two years since has now passed away. The standing firms are as busy as they can be, over-time has been demanded. The long-standing looms of Naylor & Lloyd are beginning to move again. The sagacious firm of James Humphries & Sons are contemplating fifty additional looms, and all the extra premises and plant that these will require. And now we trust that it will be demonstrated during the coming week that the compact and effective concern at Worcester Cross, having cast off every encumbrance and righted itself, is in splendid winning form, and able once more to put money into the pockets of the weavers and into the tills of the tradesmen, and to swell the banking accounts of the investors and shareholders.

**NOTTINGHAM**—That America still continues a good customer for lace and hosiery is shown by returns from Washington giving the value of exports to the United States from various English export centres for the quarter ending September last. During the three months, from the Nottingham district (which in these returns includes Leicester and Derby), there was exported lace to the value of \$423,038, and hosiery \$364,854. More activity is observable in the lace trade both on the home account and for shipping. In the cotton millinery lace departments antique and other Valenciennes are selling in good quantities in ivory tints in the better qualities, and white in the cheaper. Fancy shades are moderately inquired for. For certain markets Malines with linen threads, Brussels applique, Point de Paris, and Irish guipures are selling. There has been a rather better inquiry for Maltese, Bretonne, and Brabant laces for assortments and making-up purposes. Briskness still continues in the bobbin net trade. Some of the heavier qualities are selling for curtains, and the finer for embroidery purposes. There is a firm demand for light tulle in silk and cotton for first communion and other veillings, and for millinery. Plain goods are firm in value. Only limited inquiries are experienced for spotted nets and stiff foundation nets. A large trade is being done in curtains, furniture, lace, and window blinds. There is an active home demand, and the shipments are considerable. Unfortunately some of the continental markets having supplied themselves with machinery, are being gradually closed to Nottingham goods. Many of the goods in this branch are sent into the town from Scotland and other places outside Nottingham for finishing and for sale, and thus come into competition with the local product. In caps, aprons and frocks a good amount of business is being done. Ordinary ruchings are slow of sale, but some novelties in frillings are attracting attention. There is no improvement in the demand for Irish trimmings, Swiss embroideries or everlasting trimmings. Chenille and fancy falls and veillings are still selling largely, but the competition in these goods is very keen. Very little alteration is noticeable in the silk lace trade. There has been a limited demand for black silk Chantilly laces. More attention is attracted to combinations of black and beige; these goods, however, run rather high in price. A few orders have been booked for black silk insertions up to five or six inches in width, and for streamers. The exceeding mildness of the weather is making itself felt in the hosiery trade. Business is less active, but no change in prices can be noted. Black merino and cashmere stockings are in good request. Silk embroidered goods are moving in moderate quantities. Natural wool vests and combinations keep steady in value. In heavy half-hose there is less doing.

**BELFAST**.—Our market keeps firm and steady throughout, and in the cloth departments particularly the amount of fresh business coming forward is highly encouraging. Prices, as a whole, are firm, higher rates ruling in many cases. Supplies of flax are gradually getting smaller at the farmers' markets, and the demand, owing to the poor quality of the fibre and the prices asked, has been of a dragging description. Yarns have met with a moderate share of attention, but manufacturers are not exceeding their immediate requirements, and are holding off in expectation of easier rates. That such will prevail is highly improbable, though some common spinnings have changed hands somewhat under full prices. How-

ever, as manufacturers are liberally supplied with orders, there is no doubt the present is merely a temporary lull. Coarse tow goods continue to sell in considerable quantity, and some makers are so fully committed ahead that they decline fresh business even at full rates. For handkerchiefs there is an increasing demand, and damasks and housekeeping goods are changing hands in fair quantity at late full rates. Scrims have lately been receiving a good share of attention, and the demand for them is likely to increase. There is also a larger inquiry for hand-loom linens, and as outdoor work will soon interfere with the regular production, any parcels on the market are being picked up. Home trade in white goods is steadily developing each week, marking an improvement on the previous one. Buyers have no stocks worth mentioning, and are operating on a fairly liberal scale. The export branch is also looking up, and altogether our staple trade is in an exceedingly healthy condition.

**LYONS**.—The market is fairly active, with a satisfactory demand for reassortment for spring, but with few orders being placed in advance for later delivery. The fall order season has not opened, but preparations are being made by manufacturers so as to be ready with their sample collections. The demand for spring is good for printed silks of all kinds, which fashion is favoring and which are likely to bring the season to a successful finish. Printed-warp effects are good. Pekins are purchased for ready delivery, while some orders for these have also been given for the future. Merveilleux, surah, and satin duchesse find buyers. Damasks are liked, but orders in advance have been limited recently, and the looms have not much work provided ahead for these goods. Shaded damasks sell. Fancies in jardinière effects find takers. The situation, on the whole, is not unsatisfactory, but the depression in raw silk prices having made buyers of fabrics more cautious in placing orders, the spring season, as far as the looms are concerned, will close less brightly than it was at its opening. In ribbons the situation is good, and plain ribbons sell readily. Fancy ribbons receive attention and novelties find a good market. Plaids are better liked than stripes. The velvet market is unchanged, and deliveries on previous orders are made, while new orders are limited. Printed and shaded velvets receive attention.

**CREVELD**.—Retail distributors are ordering goods more freely, and wholesale houses report a better inquiry for home consumption. The favorites in the demand continue to be the warp-printed effects. Warp-prints are in good demand and scarce, but while they sell readily for present delivery, there are few buyers who are anxious to place orders for late delivery, as the fate of this style and its success as a leader for next Fall also are still in doubt. Plain taffetas are liked. They sell well and are still giving good work to the looms. In goods for the cloak trade, the demand, which has not been sufficiently lively till now, has been affected by strikes and threats of strikes in the Berlin cloak trade. This has disarranged to some extent the even development of the demand. Linings, which were in good movement, are suffering also from the same cause. The manufacturing situation is rather healthy, and stocks have not been accumulating. Manufacturers have been well able to hold their prices during the dull period, and values are firm. Advances in prices of silk fabrics, which were demanded by manufacturers when raw silk prices were high before the close of the year, have not been obtainable, owing to the subsequent decline in raw silk prices, but otherwise no ground has been lost. The looms are still well employed, and the decrease in production in other branches is compensated by an improvement in tie silks, for which fair orders have already been placed. Velvets are unchanged and quiet.

**ZURICH**.—The number of buyers in the market is limited, and only a moderate business has been done. Manufacturers are behind in their deliveries of warp prints, and buyers are pressing for their goods, but they show little anxiety to place new orders. Business with America is far from brisk, and while something has been done for the United States in liqing silks, there has been little business done in dress fabrics. For England business is better, but there is still room for improvement. Fancies and novelties in taffetas are liked. Shaded taffetas are in improved demand, and

cheap black and white taffetas sell. Colored surah and merveillex are not selling in as large quantities as used to be the case in former seasons.

**CHEMNITZ.**—Since my last report the market has changed considerably. While for the last month it has been very dull and little has been done, during the last week it has picked up, and orders for winter hosiery have been coming in freely. A number of buyers are expected to arrive here shortly. Not only will prices not decline, but an advance may be expected soon, for wages are lower at present than they were last summer, and if any life comes into the hosiery trade the working people will use the chance to bring their earnings up to an amount on which they can live, instead of merely existing. Fleeced hose are sold in large quantities in ladies' styles. Misses' ribbed hose are in larger demand in fleeced qualities than they have been for several seasons. Ladies' hosiery in heavy weights, but not fleeced, has been in good demand all season, as reported in previous letters, and therefore stocks will not accumulate in that class of goods. As to colors bought, tans seem to be taken less than for spring, and mostly all orders call for black. In men's half-hose pretty nearly all orders on cotton goods are for black, and while fleeced styles are also selling; the larger demand is for medium weights not fleeced. In men's cashmere half-hose good orders have been taken on heather mixtures, of which several houses are showing an excellent assortment. In the glove trade there has also been a decided change. Several mills are running overtime. In ladies' cashmere gloves large orders on low-priced qualities are in the market that cannot be placed yet, owing to the fact that the factors want more money, as they have to pay more money for sewing and stitching. In Astrakhan gloves very low-priced styles are shown for men's and ladies' wear, but it is doubtful whether they will prove a success, as they cannot give any satisfaction to the wearer, while a plain cashmere glove at the same price will last a good while. In heavy knit gloves the demand is also a good one. Manufacturers of caps and bicycle sweaters have orders enough to keep them going for months. The latter article has never before been in such demand.

**SOUTH OF SCOTLAND.**—Business in the South of Scotland woolen trade is not what it should be, taking the manufacturers all round. Many looms are standing, and in some cases short time is being run. On the other hand, there are a few of the makers who have plenty of work before them. Confirmation orders are still slow to come in, but it is fully expected that in consequence of the opening of the London sales a change for the better will take place. It is expected that wool will go higher, and buyers have been advised to confirm their orders at once.

**DUNDEE.**—The linen branches of the Dundee trade are still quiet, but the jute market continues to advance, although, owing to the prices asked, sales have been few. Flax is offered freely, but only a few trifling lots have changed hands. The quality of the goods being received and the high assortments shipped are unsatisfactory, and prevent spinners buying. Flax and tow yarns are in slow demand, and some common wefts have been bought at low rates, finished. Orders for linens are coming in regularly, and makers, both for home trade and the foreign markets, are all well engaged for some months. Jute has had a firming tendency, more on account of the higher exchange than of any improvement in the demand. The inquiry for jute yarns keeps up well, some considerable orders having been placed both on home account and for shipment at full current rates. Carpeting, rugs, and fancy goods are selling steadily.

### CHINESE COMPETITION.

In connection with the fact that the chambers of commerce in some of the English manufacturing towns are about to send an investigating commission to China to report on the commercial situation in the Flowery Kingdom, it is interesting to note that China is steadily advancing towards the satisfaction of her wants without calling on outsiders.

That there is evidence of real awakening on the great continent cannot be denied by those who take the trouble to observe, while

those who make a study of our consular reports have impassive evidence of the progress placed unmistakably before their eyes. The principal emporium of China's foreign trade is Shanghai. Here the value of imports and exports rose from 134,000,000 taels in 1893 to 145,000,000 in 1894, and this at a time when the Japanese army were carrying all before them. In the latter year the Japanese for the first time put cotton cloth, the product of the Osaka mills, on the Shanghai market, in competition with the cloth despatched from Manchester and Lowell, Massachusetts. America has by far the largest share in the imports of cotton cloth, the quantity being three times that sent from here, whilst Bombay holds the field in cotton yarn, of which she sent some 660,000 cwt., compared with 45,000 cwt. sent from here. Even Japan sent 37,000 cwt. during the year of the war, compared with 3,000 cwt. the year before, whilst the local mills produced as much as we exported ourselves. The local expansion in cotton spinning would therefore seem destined even to oust external competitors, and it is therefore highly desirable that our spinners and manufacturers should endeavor to obtain a greater hold before the expansion assumes dimensions at which it will be difficult to compete. Of course, there is a vast margin to fill up before this can occur, since there are at present less than a dozen local mills at work. In Shanghai six mills are working or in course of construction; at Hankow two, at Ningpo one. The number of spindles revolving is 93,200, in construction 170,000, looms constructing are over 1,000. The number of bales turned out in one of the Shanghai mills is 30,000 per diem. The number of working hours per diem is 21½, men, women, boys and girls working in two shifts; the men and women in each shift number 190, boys and girls, 160. The men are paid from 4d. to 6d. per diem; the women, 1½d. to 4d. Fifteen tons of coal are consumed in the 21½ hours work; the cost of production per bale, exclusive of cotton, is, at 3s. to the tael, 3½d. per pound. In 1894 raw cotton was for the first time largely exported; 1,107,000 cwt. went from Shanghai to Japan, and 115,000 cwt. to Europe—the first sent thither from that port since the close of the American war. The bulk of this raw cotton went to Hamburg, where its price was less than 3d. per pound. The fall of exchange—which reduced the value of the tael from an average of 4s. in the previous year to 3s. 2½d.—no doubt stimulated exports under this and other heads. Raw white silk was exported to the value of upwards of 17,000,000 taels, 3,000,000 above the amount in 1893; while the export of waste silk nearly doubled. Nine steam silk filatures under foreign supervision have been established in Shanghai, and produce the best silk in the world, obtaining a price of from 25 to 50 per cent. above that hitherto paid for silk turned out by the defective native methods. Over 4,000 bales were exported; in the current year this amount will be largely exceeded, other filatures being in course of erection. Pending the express recognition of the right of all foreigners under the most-favored-nation clause to erect and work cotton mills in Shanghai and elsewhere, Chinese capitalists are themselves doing a great deal to develop cotton spinning in the Empire. The latter have always at hand an abundant supply of raw material, which even the Japanese have to procure from abroad. They will thus also be free from the burdens of freight, marine insurance and duty—a duty which may have to be twice paid—on the export of the raw material from China, and on the import of the yarn into China. And they have also at command an abundant supply of labor as cheap as the cheapest in Japan; inferior to the latter in intelligence, perhaps, but superior in strength, docility, faith in observing agreements, and perhaps in endurance. It must thus be admitted that the prospects of cotton spinning in China in the future are somewhat rosy. Taking all these items into consideration it must be apparent that great progress is being made, and it is a matter for regret that our own manufacturers and spinners should be behind hand in the race. It would be interesting to know, at any rate, why our exports to China are less than those from America because herein the low-wage question does not seem to enter, as it does with Bombay and Japanese products. Whatever be the cause, it ought to stimulate our manufacturers to greater endeavors, and as an outlet for these, nothing, it seems to us at present, could be

better than joining Blackburn in its proposed mission, and so obtaining information first hand. With all the talk there is in the air regarding the decline of our cotton industry here—much of which is justifiable—we still hope that there is some scope for us. And we are borne out in this contention by the knowledge that sooner or later there will be a demand on the part of the low-wage operatives of India, China, and Japan, for better conditions of living; and when this is so, the chance of our own operatives in showing their long-inherited skill will probably do much to help us to retain our position—always providing that their standard of living has not been, in the meantime, lowered, as would seem to be implied by some of the speeches at the recent meetings of the Oldham Chamber of Commerce. We are, of course, prepared to admit that in the period of transition from low-wage conditions to those of a higher character, much suffering may be endured by our own manufacturers and operatives; but we are convinced that any substantial reduction of wages, whilst perhaps temporarily bridging the gulf, would only in the long run tend to accentuate the misery by lowering the purchasing powers of the operatives, and so still further reducing the volume of our home trade.

### RETOUCHING TEXTILES.

TRANSLATED FROM "LEIPZIGER MONATSSCHRIFT FÜR TEXTIL-INDUSTRIE."

However careful one may be in the manufacture of textiles, the final examination of the cloth before it leaves the works will be pretty sure to reveal a whole series of little irregularities and defects sufficient, notwithstanding their individual insignificance, to spoil its appearance. In the case of plain, unfigured cloth, there will generally be found small white or light-colored nops, tiny threads, minute portions of foreign matter, bast, straw, cotton, or burrs, left undetected in cleaning the raw material. The removal of these substances cannot now be effected without damage to the finish, so they must be hidden from view by other means. This is usually accomplished by the application of color to the questionable spot, mostly by the aid of the so-called nop tincture or specially prepared crayons, but frequently only an ordinary lead pencil is employed. In such cases the process is of the simplest description, and requires no particular skill. The case is, however, altered when we have to deal with figured goods, particularly with designs where the effect is brought out by means of sharp contrasts of color—such as, for instance, all two (or more) colored cords, all glacés where dark wools are shot in white or light-colored warps, and in the well-known and equally dreaded 1 x 1, 2 x 2, and similarly warped figures. In these cloths every defect, even the most minute, and whether caused in the spinning or weaving processes, comes prominently into view, and usually in such a manner that the removal of the faulty thread and replacing it by sewing another is not to be thought of.

The defects in two-colored cords mostly show themselves as little nops, splashes, blazes, or streaks resulting from irregularities in the individual fibres or from variations in the twist of the cord, the former throwing up the ends of the thicker fibres as points and splashes, and the latter giving the fibre and cloth a blazed appearance. Inequalities in spinning are manifested, in the ordinary yarns, in the warped patterns alluded to, as tiny streaks and lines, and wider or narrower longitudinal or transverse bands or blends in the plain glacés, etc., where the twill and diagonal design is formed by the aid of pronounced divergence in color between warp and shot. In all those cases where slight defects have accumulated or the irregularities extend over a large space, attempts at rectification by tincture or crayon are not only troublesome, but useless, and a special treatment becomes necessary. This process is in many instances kept as a trade secret, and forms a special business, but it is of sufficient interest for its description to be valuable. The method pursued consists in the application of liquid coloring matters, either to the fault itself or to the surrounding tissue, according to circumstances. If, for example, the cloth contains dashes or bands of lighter color than the rest, these are darkened by the direct application of color; but should, on the other hand, the faulty specks be darker colored than the surrounding surface,

the latter is treated in such a manner that a gradual shading off is produced, it being difficult, if not impossible, to successfully lighten dark patches. The necessary dyes can be produced by mixing suitable coloring matters with a little dextrin dissolved in spirit, and reducing the mixture considerably with more alcohol, which is used in order to produce rapid drying and thereby prevent running, obliteration, or spotting.

It is advisable to keep a stock of solutions of the colors in bottles. When required for use all that is then necessary is to empty a little into a saucer and dilute with spirit. Only very weak liquids or solutions must be used, such as will barely stain a strip of white paper on immersion, and it is also important to keep the liquid homogeneous by thorough stirring. The color is applied by round hair brushes with long handles, the hairs being long and soft. Several sizes of these should be kept ready at hand. The cloth is suspended from a rack, and the work is carried on at, or rather higher than, the level of the worker's head. The brush is dipped in the color and pressed well before being applied to the cloth, and the worker then, holding the brush by the extreme end of the handle, draws it over the surface of the cloth with a short tremulous motion, never with a firm stroke. The hair of the brush is pointed upwards and the handle downwards, otherwise too much color would be distributed.

There are six chief colors which suffice for this work. Such are: Blue black, reddish coffee brown, deep blue, powerful yellow, yellow green, strong red. The three last named are mostly used only for toning, and in small amounts. By suitable blending any desired shades can be produced, but these are seldom necessary for use alone, and nearly always require to be mixed with black, this being the principal color, and therefore most used. To discover the proper shade to apply in any particular case, the following method is adopted:

The first step is to prepare the black color. This done, the general shade or ground shade of the cloth—i. e., the prevailing darker color therein—is identified, and a suitable quantity of the corresponding chief color—blue, brown, red, or yellow—is diluted and added to the black. An experimental touching is made at the end of the piece, and the appearance of the color compared—by holding the cloth sideways—with that of the ground, rectifying any divergence in the necessary manner, either by dilution with spirits if the color be too deep, or adding more black or ground shade if too light. A green shade may be counteracted by means of a little red, and *vice versa*. The amended mixture will require re-testing and alteration until the correct result is attained, the process entailing some little patience as well as keen sense of color on the part of the operator.

The correct blending of the shades is at once the most difficult and most important factor in the process of retouching. However, it becomes easier after a little practice than one would at first believe, particularly when the mode of testing the color by comparison on the cloth has been grasped. It will then quickly become apparent that black is the main color, and that brown or blue is insufficient for retouching even a pale tinted cloth, black being essential to this end. One important point is to be sure and squeeze the brush after dipping it in the color, so that when tested by drawing across the surface of the hand no color comes off, and the hand is barely moistened. The brush is then turned point upwards as described, and moved in a vibratory manner over the surface to be touched up.

Light patches are touched with the brush, but dark patches must be shaded up to by touching the surface on either side, the applications of the brush decreasing with the distance till all sharp gradations of color have vanished. Where the patches are particularly dark and distinct, it is usual to lighten them with white or yellow chalk before toning up the adjacent surface, in order to limit the extent of shading. It is necessary to revise a piece that has been retouched, and occasionally to repeat the process. This will assist one in any case to detect any less-apparent irregularities that escape the former scrutiny. Retouching is best performed before the cloth is pressed, as this operation will fix the colors; but subsequent washing must of course be avoided.

**CATECHU : CUTCH, GAMBIEK OR TERRA JAPONICA.**

Catechu is a tannin matter obtained from wood, fruit, or leaves of several plants belonging to families of palms, mimosa, etc. Various kinds of catechu are found in commerce.

Bombay catechu is obtained from the heart-wood and fruit of the *areca* catechu. The wood and the fruit are boiled with water, and the decoction so obtained evaporated to a syrup, which solidifies on cooling. It is sold in large irregular lumps of a dark-brown color, has a lustrous fracture, and it is almost entirely soluble in hot water. Bengal catechu is obtained from the twigs and unripe pods of the *acacia* and *mimosa* catechu. Its color is rather lighter than the Bombay variety, and it is slightly less soluble in cold water. Both the above varieties are imported from the East Indies, Java, Pegu, Singapore, etc., and have a more or less lustrous fracture. Gambier catechu, also termed cubical and yellow catechu, is prepared from the *uncarina gambier*, and occurs in commerce in small cubes, which are soft internally, and wrapped in matting. It is paler and yellower than the other varieties, and is also much less soluble in cold water. Gambier, as this variety of catechu is sometimes termed, is imported from Batavia and Singapore. It has a dull, earthy fracture, and is porous. Another variety of catechu is *kino*, or gum kino, which is obtained from the *pterocarpus marsupium*. It occurs in irregular blocks of a deep red-brown color, and has a highly-lustrous fracture. This variety is not of importance to European colorists.

All the above products have a very strong astringent taste. They are more or less soluble in cold water, but almost completely so in boiling water, says Arthur Sunderland in the *Textile Manufacturer*. They are all rich in tannin matters. On treating the aqueous solutions with gelatine or with sulphuric acid, voluminous precipitates are obtained, whilst with iron salts green colorations are produced. Catechu is sometimes adulterated with starch, sand, clay, blood, etc. A good sample should not contain more than 5 per cent. ash, or more than 12 per cent of matter insoluble in boiling alcohol.

Catechu contains two principles—one soluble in cold water termed catechu-tannic acid, or mimo-tannic acid, and the other termed catechin, or catechuic acid, which is nearly insoluble in cold water, and is also a brown amorphous substance. Catechu-tannic acid forms that portion of catechu which is extracted by cold water. It is obtained by boiling pulverized catechu with water, allowing the solution to stand for several days, when the catechin separates out and may be filtered off. The filtrate is evaporated to dryness, and treated with various reagents—*e.g.*, alcohol, etc.—to remove any impurities. It is a dark reddish-brown powder, soluble in water and alcohol, but not soluble in dry ether. With ferric salts it gives a greyish-green precipitate, and no reaction with ferrous salts. In aqueous solution it is precipitated by gelatine, albumen, and sulphuric acid. Catechu may contain 35–55 per cent. catechu-tannic acid, according to its source. With alkalis it forms soluble salts, whose solutions rapidly oxidize on exposure to air, and assume a reddish color.

Catechin forms that portion of catechu insoluble in cold water. It is obtained in the pure state by taking the solid which separates out after boiling catechu with water. This is purified by redissolving in hot water, boiling with animal charcoal to decolorize it, filtering hot, and allowing to cool. These operations may be repeated a few times. It is a crystalline substance, existing in white silky needles, which are very slightly soluble in water. Catechin precipitates albumen, but not gelatine. Dissolved in strong sulphuric acid, catechin gives a purplish colored solution. Although sometimes called catechuic acid, yet catechin has no acid properties, and is neutral to litmus. When dissolved in alkaline carbonates, the solution rapidly absorbs oxygen from the air and becomes dark red in color; and on addition of an acid, dark-red amorphous rubinic acid is precipitated. If caustic alkalis were the solvents used, then a very dark brown, nearly black, precipitate of japonic acid is thrown down under similar conditions. The same substance is also produced if a decoction of catechu is oxidized by potassium bichromate, etc. This is the property on which the dyeing powers of catechu depend, as will be seen later.

Dyers utilize the coloring properties of both catechin and catechuic acid, whilst the calico printer chiefly requires the catechin. Generally, catechu is used in cotton dyeing for the production of browns, it is, however, used slightly by the woolen and silk dyers. It is also used for coloring and preserving sails and fishing nets from rotting, as well as in medicine as an astringent, and also in the tanning of leather.

*Application to Cotton.*—Catechu is best applied to cotton by boiling in a decoction of catechu and then allowing to stand for some time, when the cotton is taken out, squeezed, and worked in a hot bath of bichromate of potash, which acts on the soluble catechin and catechu-tannic acid to produce insoluble japonic acid on the fibre. Some dyers enter the cotton into a hot bath of catechu, then work in it for some hours without further application of heat, and then treat as before. It is possible to use blue vitriol instead of bichrome, and if the color is developed by the former, it appears much yellower and not quite so full as the colors produced by the latter. If copper sulphate be used, it is the better plan to add it along with the catechu, and then develop in the usual way with bichromate of potash or soda. In the latter case the shades produced are fuller and are also faster to light than would be the case if no copper sulphate were added to the catechu bath. Green vitriol or ferrous sulphate can also be added to the catechu bath with beneficial results. It is advisable when dyeing very dark catechu browns, or even light browns, to work in a fairly weak bath—*i.e.*, compared to the shade required—and then develop in the bichrome bath, afterwards working again in the catechu decoction and again developing, and so on until the desired shade is produced. By this means darker, fuller, and more level shades can be obtained than by using very strong decoctions of catechu. It should be carefully noticed that the presence of copper in the color-lake seems to make it faster to light. Instead of adding the copper sulphate direct to the catechu bath, as is generally done, the cotton might be worked in a cold solution of the salt, either on coming out of the catechu bath or after being developed. Cotton dyed in the above way with catechu has the property of attracting either the basic coloring matters or the alizarin and natural dyestuffs. In the former case, it is the catechu or the products formed from it by oxidation which act as the mordant, whilst in the latter case it is the chromium. It is apparent, therefore, that if the tone of a catechu brown has to be altered, this can be done by any suitable dyestuff of the above groups. In the case of the coloring matters requiring a metallic mordant, the requisite dyestuff might be added to the catechu bath, when, of course, the color produced by it would be developed at the same time as the catechu. With the basic colors, however, it would be necessary to first dye the catechu brown, and then top in a separate bath with such dyestuffs as chrysoidine, safranine, methylene blue, etc.

*Application to Wool.*—At the present time catechu is very little used by the woolen dyer, although in dyeing certain shades—*e.g.*, browns—it might be used advantageously. This rejection of catechu may be due to several reasons:—(1) When excess of catechu is used, the wool acquires a harsh feel. This might be remedied to a certain extent by only using the catechin; but if this were done, it would mean either paying a fairly large price for the product—probably a larger price than for fustic or anthracene brown—or what amounts to the same thing, the dyer would have to prepare the catechin himself; and finally, his shade would be both dearer and not so fast as it could be got in other ways. (2) Another reason for its rejection is that the best and fastest shades are produced by the so-called saddening process—*i.e.*, first boiling the wool with the coloring matter, and then saddening in a fresh bath with a solution of a metallic salt. As this process is not a very convenient one for dyeing to shade, and as most of the mordant dye-stuffs—including browns and yellows—used at the present time give the best colors when first mordanted and then dyed, one can understand why catechu is not very much used in wool dyeing. The way in which wool is dyed is very similar to the process used in cotton dyeing, except that boiling solutions are used. Along with such dyestuffs as camwood and barwood, catechu would be

useful When first mordanted with bichromate of potash or other metallic salt—e.g. copper sulphate or ferrous sulphate—lighter shades are obtained than when the saddening method is used. The shades obtained with chrome are fairly fast to light and milling, and by the addition of a little copper sulphate to the catechu bath these properties are increased.

*Application to Silk*—In silk dyeing, catechu is used chiefly for two purposes. One is for dyeing silk plush in imitation of seal skin. In this case the silk is dyed in a similar manner to cotton. The other way in which catechu is used in silk dyeing is for black dyeing, when the *modus operandi* is to first mordant the silk with basic-ferrous sulphate, and dye Prussian blue. It is next worked in a very strong decoction of catechu, or, better, of gambier, to which may be added a little tin crystal. The silk seems to absorb a large percentage of catechin, and is then mordanted with acetate of iron and dyed in the usual manner. This is the method adopted for dyeing the so-called "Lyons black" in silk, in which process it is desired to weight the silk about 10 per cent.

*Detection of Catechu on Dyed Fabrics*—Generally speaking the color is little changed by reagents. Sulphuric and hydrochloric acids have very little action. With nitric acid the color is turned orange. Ammonia has no action. The color is more or less destroyed by boiling solutions of bleaching powder. The ash will also be found to contain chromium, and very often a little copper.

## THE HISTORY OF THE READY-MADE CLOTHING TRADE

### I. INTRODUCTION.

A trade which has been a very prominent feature in English commerce for many years, and which is rapidly attracting more attention in Canada, is that in manufactured clothing. We propose to give an outline of the development of the industry in THE CANADIAN JOURNAL OF FABRICS; taking up first the trade in England, and afterwards that of Canada.

At that period which immediately preceded and inaugurated the beginning of this last half-century all society was, so to speak, a huge battle-field, but it was also the dawning of a new era—an era of unfettered commerce, of beneficent legislation, scientific progress, mechanical invention, and social amelioration, says J. O. Baird, in the *Warehouseman and Draper*. In the year 1842, a period of trade depression such as has seldom been equalled during the century, was passing over England. In Carlisle, a fourth part of the population were actually famine-stricken. In Stockport, half the master spinners had failed, and 5,000 workmen were begging bread in the streets. In Lancashire, the distress was equally great, whilst in Yorkshire there was no relief to the situation. Riots commenced at Staleybridge, which spread like wildfire through the whole of Lancashire, until in Manchester alone no less than 150 cotton mills were closed, and an equal number in other trades, with the result that 50,000 workpeople were forced to stop work. The insurrection spread through Yorkshire, until many thousands of pounds worth of valuable machinery were destroyed; the military were called out; large numbers of special constables were sworn in, and ultimately the ardor of the rioters was only quelled when two thousand of them were landed in prison, and their leaders were brought to trial. When breaking the machines, the workpeople were actuated by a very natural but mistaken impulse. They saw that machinery was superseding hand labor, but they did not see how largely they themselves would benefit by its introduction. In the Great Exhibition of 1851 there were two machines destined to bear a part in the development of an industry so enormous as, perhaps, no other production of an inventive genius had ever done before or since; and yet, these two sewing machines were almost overlooked and forgotten by the millions who passed and repassed them, and even the intelligent men who reported the wonders which were displayed at this great show gave but the space of a few lines for any notice of them.

The woolen industry is one of the most ancient trades of Great Britain. There are ample proofs of its existence in the time of the Romans, who had weaving establishments of woolen cloth at Winchester. Of all the insane struggles, however, which ever took

place in any legislative community, none could ever have been more deluded than that which was protracted for more than five hundred years, from the days of Edward III., to maintain upon the statute book penalty of life and limb against the free interchange of export and import in a commodity like wool, which was really the common benefactor of all nations, and which could never be withheld from the common market without damage to all its traders. It was not until the year 1824 that wool was allowed to be exported without a prohibitory tax. Even then the ignorant prejudices of the trade itself were only overridden when it was proposed to favor the introduction of foreign wool by the abolition of the tax on its import. We shall hereafter notice the enormous importance of this new epoch to the whole woolen commerce of a great empire, and will add no more to this interesting subject now than to remark, in extenuation of the folly of the good old times, that their policy was nearly always one of "robbing Peter to pay Paul." Not only did they do their best to boycott foreigners in order to help their own traders, but poor old Ireland was also for ages the target of adverse legislation; and even if York, or Halifax, or other centres of special branches of the cloth trade chose to petition Parliament against competition from other localities they could generally succeed, for we find on the statute book many Acts like that of 34th of Henry VIII., which recites "that the poor of the city of York were daily employed in spinning, carding, dyeing, weaving &c., for the making of coverlets, and that the same have not been made elsewhere in the same country till of late; that this manufacture had spread itself into other parts of the country, and was therefore debased and discredited, and therefore it is enacted that none shall make coverlets in Yorkshire but the people of York."

It is a striking proof, however, of the wonderful recuperative power of the woolen trade that, in spite of all the legislative hindrances to its progress, in the time of James I. nine-tenths of the commerce of the kingdom consisted of woolen goods. Most of the cloth was exported in the bawls or unfinished condition, and was dyed and dressed by the Dutch, who, it is said, gained £700,000 a year by this employment. A proclamation against exporting cloth in a raw state caused great opposition both from home and abroad, as the Dutch refused to buy the cloth in the finished state; and although in this reign the company of Merchant Adventurers acquired by patent the sole right to control the woolen trade, yet in the year 1642 the town of Leeds—which had been described in the year 1533 as "a praty market, having one parochie church, reasonably well buildid, and as large as Bradeford, but no so quik as it"—is placed in Lord Clarendon's history at the head of the three towns of Yorkshire which took a lead in the woolen trade, viz., Leeds, Halifax, and Bradford, and they are called "three very populous and rich towns depending wholly on clothiers."

During the forty years which immediately followed the Restoration, the commerce and riches of England increased faster than at any other previous period. A Board of Trade was established; the shipping trade was nearly doubled; several new manufactures in iron, brass, silk, hats, glass, paper, etc., were commenced; and the art of dyeing woolen cloth was brought over from the low countries. At the beginning of the last century, when Daniel Defoe visited Yorkshire, he gave a glowing account of the wonderful progress which these towns were making in the manufacture of cloth, and also included Wakefield and Huddersfield as centres of the trade.

For the student of the history of commerce nothing could be more interesting than this great writer's account of the manner in which the cloth was sold in the Leeds market. Here he states that such was the great increase in the trade that the "cloth market was too great to be confined to the Brig or Bridge," but it had been removed to Briggate, which is at present the principal street in the town. The clothiers came early in the morning, nearly all with but one piece to sell. The goods were displayed on boards laid across trestles, which extended some distance up the street. At seven o'clock the bell was rung, and in a few minutes the market was filled with busy buyers and sellers. The buyers with their foreign letters of orders walked up and down the rows in order to match their colors, and then in whispers made their

bargain with the clothiers. In a little more than an hour all the business was done, and the cloths unsold were carried away by the clothier. In this brief space of time sometimes twenty thousand pounds worth of cloths were sold, and, as Defoe adds, "'tis all done in a whisper." This practice of making the open streets a market for the textile fabrics began in the days before Edward I. in the churchyards, until an Act was passed in that monarch's reign, 13th Edward I., stat. 2, chap. 6, in which "The king commandeth that from henceforth neither fairs nor markets be kept in churchyards for the honor of the church."

Both Halifax and Huddersfield were markets of importance for the sale of cloth in the open air at the beginning of the last century, and in Huddersfield the old law of Edward was almost forgotten, for the cloth was displayed upon the parish church walls until removed, first to the open market place, and ultimately to the Cloth Hall built by Sir John Ramsden in 1766, at which, when it was fully used, about six hundred manufacturers attended every market day to vend their wares. Both this hall, however, and the Halifax Piece Hall, are now disused for purposes of this character.

(To be continued.)

### DRY GOODS DEFINITIONS.

Manufacturers are often at a loss to understand the descriptive terms which they see applied to the new ideas in dry goods in the different commercial papers. We append a partial list of these terms, from many of which valuable ideas may be gleaned:—

*A jour*.—Open-work effect. An effect in embroidery, in which the tissue is left open and transparent.

*Armure*.—Any fancy weave may be called an armure, the effect being one of weave and not of color.

*Armure Laine*.—A corded silk resembling armure, and wool, filled.

*Barre*.—Stripes in the direction of the filling same as tracers.

*Bayadere*.—Stripes running in the direction of the filling. Color combinations, each stripe being of a color different from that next following, are a peculiarity of the bayadere, although the color effect is not indispensable.

*Bengaline*.—A common name for fabrics made with a silk warp and wool filling. When cheapened by the use of cotton in place of wool, they are sometimes called cotton Bengalines, although cotton is in the filling only. The same weave is also found in all-silk goods, designated as all-silk Bengalines. The Bengaline weave is a plain, round, corded weave, small in size, of the poplin family; but wool-filled fabrics are seen in all kinds of cords, plain and fancy, and form the family of crystal weaves, crystals or crystallines.

*Boucle* (from the French *boucle*), a lock of hair, implying similar effects on a fabric's surface.

*Bouillonne*.—Having the effect of small shirrs or gathers.

*Bourlette*.—Rough threads appearing in lines, straight or broken.

*Broche* is a swivel effect.

*Brode*.—Embroidered.

*Cachemire style*.—Oriental colorings something like the Persian effects.

*Canille*.—Literally, jointed. Applied to fancy stripes in which a knot or small square appears at intervals after the manner of the joints in cane or bamboo.

*Caracule*.—A smooth-faced or Panama-weave fabric having mohair locks or tufts woven to the ground.

*Carre dit*.—Check—square.

*Changeant*.—Changes in effects, obtained by weaving two colors together in a plain weave.

*Chappe velvet*.—Velvet in which the pile is made of spun silk, to distinguish it from the raw silk article.

*Chiffon*.—The softest thin silk material known

*Chine* means that the warp is printed before weaving, being then woven with a plain filling.

*Coquille*.—A term derived from the markings on scallop and other shells. Fluted.

*Cotele*.—A ribbon fabric, somewhat similar to the woolen poplin once much in favor.

*Croise*.—Crossed: applied to velvet, croise back velvet, as distinguished from straight back velvet. The threads cross each other at the back and form a kind of twill.

*Damasse*.—A fabric having a dull ground and lustrous figure or vice versa, similar to damask except in the way the figure is produced.

*Damier*.—Checked pattern, the name coming from the checker-board, of which it is the equivalent in French.

*Drap cuir*.—Leather cloth. A cloth having a glossy surface and closely woven.

*Drap de soie*.—Literally silk cloth. A heavy silk fabric of corded weave.

*Drap livree*.—Livery cloth.

*Drap satin*.—A wool dress material finished so as to have a satin like sheen.

*Drap soliel*.—A wool ottoman with flat wide rib.

*Dresden China*.—Chine effects in imitation of styles and colorings of Dresden china.

*Gaufre*.—By the operation of *ganfrage* the silk fabric is pressed into forms in relief, which it retains for a long time. The process is applicable principally to the lighter fabrics—pongees, gauzes, muslins, etc. By this effect satins are made to imitate moire.

*Glace*.—See changeant.

*Granite*.—An armure effect common to silk and woolen fabrics.

*Gros de Londres, Gros de Paris, Gros d' Afrique, Gros de Columbia*, etc., are all one and the same thing. They belong to the gros grain variety, and may be classed as epingles, a small rib alternating with a still smaller rib; seen in all-plain, in all-black with figures, and in colors.

*Harlequin Checks*.—Those of three or more distinct colors.

*Imprime*.—Printed.

*Iridescent*.—Rainbow and shot color effects.

*Jardiniere*.—Garden effects; effects in which many colors are employed, the patterns being chiefly of flowers and leaves.

*Jaspe*.—Mottled.

*Lance*.—Tiny dots or specks, also known as *petits pois*

*Matelasse*.—A weave by which an effect resembling quilting is produced, of course on a greatly reduced scale.

*Melange*.—Mixed. Applied to woolen goods woven in two colors, such as the "pepper and salt" effect.

*Miroir; Miroite*.—Looking-glass effects.

*Moire Poplin*.—Wool-filled cords having a crinkly effect, and watered or moired.

*Natte*.—Tressed or basket weave. Goods woven into small checks in the same or in different colors, giving the goods the appearance of being bruised.

*Nid d' Abeille*.—Beehive effects.

*Ottoman*.—All-silk, silk and wool, or all-wool fabric, weave of the family of faille, but wider rib.

*Persian Effects*.—Also called Oriental and cashmere from the mixture of colors and designs common to cashmere shawls.

*Pointille*.—Dotted.

*Quadrille*.—Checked, in squares. The term is applied principally to small checks. Shepherd checks may be classified among the quadrilles.

*Rays*.—Striped.

*Royal*.—Rich styles and effects of the last century.

*Seed Effects*.—Tiny dots, looking as if small seeds had been strewn over the tissue.

*Soliel*.—A name given to shiny materials. Satin soliel is used for millinery purposes and looks very nappy.

*Tete de Negre*.—Niggerhead.

*Trame*.—Filled; from tram; filling, weft. For example; *trame coton* means that the weft, or filling, is of cotton.

*Travers*.—Stripes similar to those in bayaderes, running in the direction of the filling.

*Tussah*, or wild silk, is silk obtained from a species of worms that feed on oak leaves. It comes from India, is darker in color

than ordinary raw silk, contains more gum and is more difficult to use.

*Velour*—Velvet Used also for a quality of woolen goods.

*Velour Albigeois*—A fancy striped velvet in two tones, the stripes running seven or eight to the inch.

*Velours Reverse*.—Same as mirror velvet.

*Wool Moire*.—A fabric of silk and wool similar to Bengaline, and watered

*Zibeline*—A wool material in imitation of sable fur. Has on the face long unshorn hairs that give it a fur appearance.

### TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the values, in sterling money, of the imports of textile interest to Canada, from Great Britain for the month of January, 1895 and 1896

	Month of January.	
	1895.	1896.
Wool .....	£ 186	£ 1,066
Cotton piece-goods.....	81,108	75,853
Jute piece-goods .....	8,483	13,540
Linen piece-goods .....	22,084	28,443
Silk, lace .....	8,658	2,116
" articles partly of.....	2,395	4,582
Woolen fabrics.....	19,519	22,244
Worsted fabrics .....	55,291	58,548
Carpets.....	23,627	20,016
Apparel and slops .....	34,358	35,462
Haberdashery .....	15,161	20,412

### LITERARY NOTES.

The *Century Magazine* for March is before us. Its contents illustrate the recent observation in this journal, that between the material of which the *Century* is made, and the unhealthy stuff which passes for literature in most of the contemporary magazines, there is a great gulf fixed. "A Personally Conducted Arrest in Constantinople," by F. Hopkinson Smith, is a graphic sketch of present-day features of life in the great Turkish capital, around which so much public interest is now centred. The same writer concludes in this number his very original story of "Tom Grogan." Phillip Vanderdicken (he of the "Phantom Ship") is beautifully allegorized in verse by B. S. Parker, whose poem is illustrated by a lifelike picture of a vessel in a thunderstorm. Mrs. Humphrey Ward's story, "Sir George Tressady," is developing in this number, and Prof. Sloane's "Life of Napoleon" is moving on in stately chapters towards the climax of that great commander's career. These are only a few features of a fine number.

The March *Canadian Magazine* is perhaps the best of the recent issues of that deserving publication. The place of honor is given to a short study of the character of Robert Burns by Dr J Campbell. A. H. M. Colquhoun tells us something of the men who made McGill University, in which are portraits of James McGill, the founder, E. A. Meredith, Prof. Peterson, the present principal, and last, but not least, Sir William Dawson, whom Canadians are learning more and more to honor, not only as an educationist or a geologist, but as a writer possessed of broad and enlightened views. An article on the Roentgen rays by F. T. Thomason; "Sea Dreams," by J. Edward Maybee; the "Church's Fatal Mistake," by W. A. Douglass, and a study of Bliss Carman, the Canadian poet, by Harry W. Brown, are among the noteworthy articles in a generally excellent number.

Our New York contemporary, the *Dry Goods Economist*, has in a recent number eclipsed its own record for brilliant covers and striking colored advertisements. Its patrons seem to have converted its pages into a museum of fine art in advertising. But lest any one should think our contemporary has become merely gay, we hasten to say that its trade reports and editorial contents are as varied and comprehensive as ever. For the aptness of its articles, the wide scope of its foreign trade reports and the attractiveness of its typography, the *Dry Goods Economist* stands unrivaled among papers devoted to the dry goods trade in any part of the world.

## Among the Mills

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

The Paton Mills, Sherbrooke, Que., are working overtime in some departments.

F. H. Crowell has started operations in his bobbin factory at Dunkin, near Sherbrooke, Que.

The machinery for the Sherbrooke Yarn Co. is arriving, and will be at once placed in position.

Heidermann & Trachsel will rebuild their flax mill, near Shakespeare, Ont., which was burned down recently.

One of the main shafts in the engine room of Newlands & Co., Galt, Ont., broke and stopped the machinery for a short time recently.

Two carloads of sisal used in the manufacture of binder twine, were shipped to Brantford by the Kingston Cordage Co. one day not long ago.

The Rosamond Woolen Company are putting a line of curled overcoatings, G-48, on the market, which are causing a good deal of favorable comment in the trade.

The Kingsville Woolen Mills, Brown & Wigie, Kingsville, Ont., have registered a neat card at the patent office, which will in future be attached to all blankets which this enterprising firm puts on the market.

The Markham Woolen Mills Company assures us that the item in our last number about their mills closing down, owing to a labor dispute, is incorrect. Their mill is now running full time, with orders ahead for three months.

Buckle & Sons' lace factory, Port Hope, Ont., with contents, was completely destroyed by fire on the 10th. Total loss, \$6,000. The building was insured for \$1,800 in the Hartford; the stock and machinery for \$1,500 in the same company.

The manufacture of cotton blankets has assumed considerable proportions in the United States in the last few years. It is reported that one of the mills in the Colored Cotton Mills Co. is enlarging its premises in order to produce this class of goods.

Wm. Parks & Son, Limited, cotton manufacturers, St. John, N.B., have appointed J. Sproul Smith, recently of the firm of Wm. Hewett & Co., of Toronto, agent for the sale of their goods to the wholesale trade, and also to the manufacturers of Ontario, west of Kingston.

The woolen mill property of Johnson & Son, who absconded from Way's Mills, Que., some time ago, has been sold at Coaticook under the sheriff's hammer. It was bid in at \$600 by the executors of the estate of the late Hiram Davis, the mortgagee of the property.

There was a misunderstanding in the spinning room of the Canada Cotton Mill, Cornwall, recently, caused by a re-arrangement of the scale of wages. Fortunately, however, the matter has been adjusted to the satisfaction of both employers and employees.

The glove works of H. H. Worden & Co., Acton, Ont., have been removed lately to the large warerooms until recently occupied by J. A. Murray & Bros., on Mill street. This will make a commodious, well-lighted factory, and will facilitate the operations of the firm.

A number of the employees of the Dominion Cotton Mills Co., Magog, Que., held a meeting recently, which resulted in the formation of a new band for Magog. The name of the new organization will be the Dominion Cotton Mills Brass Band. They have already some 22 active members, besides a number of honorary members. The band are already in possession of their instruments and practice will commence at once.

Winnipeg is to have a starch factory, it is said.

The Goldie-McCulloch Company, of Galt, Ont., is filling an order for an engine from the Standard Shirt Company, of Montreal.

The Fleming foundry, St. John, N.B., is working overtime on some repairs and improvements on the cotton mills of Wm Parks & Sons, Ltd.

The outbuilding at the water power factory, Sherbrooke, Que., is having its roof raised, and is being fitted up as a dye house for the new Sherbrooke yarn company.

An employee of the Dominion Cotton Mill Co.'s mill, at Brantford, Ont., named Maggie Detwiler, sued the company for a week's wages held by them. Defendants claimed that plaintiff left without due and proper notice. The magistrate took this view, and dismissed the suit.

At the annual general meeting of the shareholders of the Cornwall Manufacturing Co., Ltd., the following directors were elected for the ensuing year: Andrew Allan, president; W. M. Ramsay, vice president; R. Meighen, managing director; Sir Donald A. Smith, Hugh Montague Allan, W. A. Hastings and A. T. Paterson.

On the evening of the 6th March, the employees of the Lambton woolen mills met at the home of their superintendent, A. M. Morison, and presented him with a beautiful walnut bookcase and secretary, suitably inscribed. Mr. Morison, who is leaving Lambton Mills, was also made the recipient of a handsome banquet lamp from the teachers and officers of Lambton Methodist Sunday School, he having been a very efficient worker in that church for a number of years.

A new industry has been started here, says a Kingston exchange, which promises to develop into a large manufacturing concern. Mrs. McDougall, of New York, has opened a glove manufacturing establishment on King street in the building next to Fraser's Bank. J. M. McElgrew is foreman of the new works, and is a first-class mechanic. He and several assistants are engaged in making stock. The establishment will turn out Saranac, calf and kid gloves and mittens. They make goods for ladies and gentlemen, and will make them to order. As soon as there is sufficient stock, travellers will be sent out.

We beg to draw attention to the advertisement of Root, Benn & Co., late G. Root & Co., of Bradford, England. Mr. Benn, who is now on a visit to this country and is calling on as many of the customers of the firm as his time will permit, was formerly partner in the well-known firm of Joseph Benn & Sons, the large alpaca and mohair manufacturers, and joined the firm of Root, Benn & Co. the beginning of this year. Mr. Benn's practical knowledge of combing and spinning, etc., puts this firm in the front rank as combers and top makers. The old firm of G. Root & Co. has done a good business in this country through Robert S. Fraser, their representative, and now have considerably extended their business and look for still further enlargement. Mr. Fraser will carry as usual samples representing their regular standard lines, and will keep stock of certain leading lines. They purpose, in addition to their tops and noils, making a specialty of pulled B.A. and scoured goods.

The old board of directors was re-elected at the annual meeting of the Wm. Parks & Sons' Company, Lt., of St. John, N.B. The following resolution, which speaks for itself, was passed: "That the stockholders commend the desire of the directors to make a greater variety of goods, and approve of their getting machinery for that purpose as soon as possible, so as to be able to manufacture any class of goods used in Canada, which they may think would be more profitable to make than the lines on which the mills have been hitherto running, that whereas the production of printed cottons in Canada amounts to only one-third of the quantity consumed, being two-thirds to be imported from abroad; and whereas an establishment for printing cotton goods requires the product of many cotton mills to supply it with material to enable it to work to advantage; and whereas the only print works in Canada are owned by the corporation that control nearly all the cotton mills, and it being impossible at the present time to establish other print works with any

prospect of success; therefore resolved, that the directors of this company make application to the Government for permission to re-import the cotton cloth made in the mills of the company after having exported it for the purposes of being finished, on paying duty only on the cost of finishing. This privilege to be granted only until such time as facilities for finishing the goods are available in Canada to supply the wants of the country."

#### PERSONAL.

W. R. Campbell, of Almonte, Ont., has secured a position in a large woolen mill in Auburn, N.Y.

Lewis Simpson, manager of the Montreal Cotton Co.'s mill at Valleyfield, is on a visit to Atlantic City, N.J.

The Carleton Place *Herald* announces the sale of the household effects of J. M. Masson, formerly manager of the Hawthorne Woolen Company.

Chas. Shuman, of Thorold, Ont., got caught in the carding machine of the knitting mill recently, and received considerable injury to his hand.

Esther Cummings, who is employed in the Dominion Cotton Co.'s mill, in Brantford, Ont., injured her hand seriously in the machinery the other day.

Robt. Meighen, managing director of the Cornwall Manufacturing Company, has bought the residence of Lord Mountstephen, one of the finest in Montreal.

J. Graham, for some time past in the employ of the Canadian Express Company, has obtained a situation as foreman in the color department at the oil cloth factory, Kingston, Ont.

Robert McCulloch, a well-known business man of Hawksville, Ont., proprietor of the woolen mills, is dead. He was a brother of H. McCulloch, Goldie-McCulloch Company, Galt, Ont., and father of A. L. McCulloch, C.E., of the same place.

The late Jas. Scott had been in the dry goods business in Toronto since 1850, literally growing up with the town. He possessed what is perhaps the most indispensable quality in a business man, integrity in a high degree, and he was rewarded by a large measure of success.

Robert McCarter, Toronto, brother-in-law of J. M. Masson, manager of the Vassalboro' Woolen Mills, has obtained a lucrative position with the Clark Spool Cotton Company, of New York, and has gone to Oregon. His headquarters will be at Portland, and he will have charge of the business for the State.

The woolen interests of Almonte, Ont., were well represented at a deputation which waited on the Ontario Government recently, to ask aid for a branch railway line to connect with the O. A. & P.S. Railway, and thus let the manufacturers out of the hands of the C.P.R. The mayor, Wm. Thoburn, and Jas. Rosamond, secretary-treasurer of the Rosamond Woolen Co.; J. M. Rosamond, secretary Almonte Knitting Co.; D. M. Fraser, manufacturer of knit goods, and Jos. Ainley, manager of the Elmsdale flannel mills, were members of the delegation.

James Brough, who died recently in Ottawa at the age of 79, was one of the founders of the dry goods business of the capital. He began business on Wellington street as far back as 1849, continuing in the same locality until 1854, when he formed a partnership with the late Gilbert Heron, of Glasgow, Scotland, and removed to Sussex street, to the premises previously occupied by the late Andrew Main, one of Bytown's early merchants. The firm was then Brough, Heron & Co., and the business thus continued for some five or six years, when deceased left the firm and opened on Sparks street in the wholesale dry goods line. This business was extensive, having connection with Heron, Dickson & Co., of Glasgow, but its existence was cut short by the unfortunate illness of Mr. Brough, which began thirty-six years ago, and only terminated recently by the death of the sufferer. Deceased had been in London, Eng., on business, when he was stricken down with paralysis, and although the best medical aid was sought, both at home and abroad, only partial relief was obtained, and Mr. Brough was reluctantly compelled to give up business.

## FABRIC ITEMS.

Danford, Rocho & Co. are opening out again at Newmarket, Ont.

The stock of Macabe, Robertson & Co. was sold February 19th, at 47½c. on the dollar.

J. L. O'Malley succeeds to the carpet and furniture business of J. & J. L. O'Malley, 160 Queen street W., and 434 Yonge street, Toronto.

M. Loranger & Co., who have been doing a dry goods business at Granby, Que., for some months, are returning to Sherbrooke.

H. & N. E. Hamilton, dry goods merchants, Montreal, have removed their business to their new premises on St. Catherine and Peel streets.

The bankrupt dry goods stock of Macraut & Co., Strathroy, Ont., was sold recently at 72 cents on the dollar to Newton & McKellar, of the same town.

T. L. Browne & Co., clothiers, of Victoria, B.C., are about to wind up business; and J. Horner & Co., of the same city, say they intend to go out of trade.

H. H. Langlois and G. F. Moore have bought out the dry goods business of F. R. Darche, Sherbrooke, Que. M. H. Loranger has opened a dry goods store in the same city.

The Carsley Sons & Co., Ltd., is the name under which the well-known Montreal house intends to do business, according to an application in the official gazette; capital, \$300,000.

James Baylis & Son, the only house in Montreal dealing exclusively in carpets, announce that they are selling off, and retiring from business. The firm has been in business a great many years.

The John Eaton Co., Ltd., have applied, through their solicitors, McWhinney, Ridley & Co., to the Lieutenant-Governor, to grant supplementary letters patent to increase their capital stock from one hundred thousand dollars to five hundred thousand dollars.

Stewart & Co., shirt manufacturers, Guelph, Ont., have been in business thirteen years, but unfortunately not always successfully. In December, 1893, they put their affairs into the hands of an assignee, and made a settlement with their creditors. Another assignment is now announced.

The straw hat factory of J. E. Molleur, St. Johns, Que., is said to be the largest on the continent, the capacity being 1,200 dozen per day, and the average number of hands employed 250; Mr. Molleur runs a carpenter shop, machine shop, foundry and box factory in connection with his establishment.

The statement of liabilities of the firm of James McDougall & Co. has been filed. The liabilities amount to about \$65,000. Principal creditors: T. Creswell & Co., \$42,657; W. Frieth, Sons & Co., \$2,883; W. P. Saveny & Co., \$1,020; Greenmount Spinning Company, \$1,060; Waterloo Woolen Co., \$1,539; R. Forbes & Co., \$1,351; Brodie & Co., \$1,120; Ferguson, Patterson & Co., \$1,267; Hawthorne Woolen Company, \$861; Rosamond Woolen Company, \$769; A. Muldrew & Co., \$653; Cornwall Manufacturing Company, \$620; Globe Woolen Mills Company, \$1,210; Montreal Woolen Mills Company, \$697; Bank of Montreal, indirect, \$18,000, and Quebec Bank, indirect, \$6,000.

The Toronto departmental stores are not in it with Quebec. In this ancient city, which some people consider slow, a dry goods merchant is alleged to have developed an *appanage* which eclipses the new departments of any of the "universal providers" of our western cities—namely, a whiskey still. This department is alleged to have been started in the premises belonging to George Vezina, dry goods merchant, only a few doors from an illicit still recently seized by an inland revenue officer. The still is alleged to have been a complete and well-fitted one, and as the officer remarked on seizing it, "the only thing lacking to put it on a footing with other distilleries was the presence of an excise officer." The moral of the seizure will be that though the profits on dry goods are not to be compared with those on wet goods, the dry goods are safer.

R. Reilly, Toronto, hatter, has assigned.

Muir & Yates, dry goods, Wallaceburg, Ont., offer 25 cents on the dollar.

J. A. Trepannier, dry goods, Montreal, is offering 40 cents on liabilities of \$5,700.

R. Gamble & Co., Ottawa, are asking for the extension of \$20,000 over twelve months.

The wholesale clothing firm of Chalcraft, Simpson & Co., Toronto, is dissolved, R. E. Simpson retiring.

P. Sharkey & Son, a long-established tailoring firm in St. John, N.B., has been compelled to ask for an extension.

After doing a tailoring business for a number of years in Cobourg, Ont., Michael Quinn, who has been well reported, assigns.

Wm. Grant, dry goods, Brantford, asks his creditors to accept 50 cents on the dollar. The firm began business as Taylor & Grant in 1856.

R. M. Anderson, of the firm Northway & Anderson, will take charge of the new store which this firm is opening in St. Thomas, Ont. Messrs. Northway & Anderson own retail stores in Tilsonburg, Orillia and Simcoe.

E. H. Paquette has been in the dry goods business at Coaticook, Que., for a full quarter of a century, and was fairly successful up to about four years ago, when he arranged a compromise at 45 cents. He is again reported in trouble, with liabilities of \$4,072.

For twenty years or more, V. G. Cornwell has been a tailor in Colborne. He at one time did a good country trade, employing twenty-five hands, but appears never to have made much money. He granted credits too freely. Now he owes \$10,000, and has nominal assets of \$9,000 to pay with, and assigns.

Wm. Pearson was in charge of the clothing department of Thos. Thompson & Sons' Toronto business for a number of years. He started for himself as a clothier two years ago, with \$2,000, which he had saved out of his salary. Last April a fire took place in his premises, and he was awarded \$6,000 insurance, which was believed to fully cover his loss. He has assigned.

The dry goods bankrupt stock of Villeneuve & Co., Québec, was sold by auction. The St. Sauveur stock was purchased by Mr. J. A. Trepannier for 63½ cents on the dollar, and the St. Anne stock by Mr. Gagnon, for Mr. Villeneuve, for 60 cents. The book debts, amounting to about \$300, were bought in by Mr. Dion for 52 cents in the dollar.

Two more failures are reported in the Montreal tailoring trade, as a result of the insolvency of James McDougall & Co., wholesale woolens. T. S. Tait, doing business under the style of Wm. Farquharson, has assigned, owing \$10,447.—A demand has been served upon T. Taylor & Co., who began business about eighteen months ago, and whose main liability is also to J. McDougall & Co.

## THE WOOL MARKET.

TORONTO.—Trade may be said to be on the mend, and enquiries are much more numerous, but it is a buyer's market strictly, and the small volume of business doing is not on a very profitable basis. The mills are entering the market more freely, and it is expected that business will improve considerably within the next month. Fine wools are rising in price, but Canadians are easier. We quote: fleece, 21 to 22c.; pulled, 17 to 21c.

MONTREAL.—The steady advance in prices at the London wool sales must have a stimulating effect on the prices here, as stocks are far from full. Some good sales of Cape are reported at 14½ to 16c. Demand is still limited. The following quotations show the condition of the market: Greasy Cape, 14c. to 16c.; Natal, 15c. to 17c.; Canadian fleece, 21c. to 25c.; pulled, 22c. to 23c.; B.A. scoured, 27c. to 35c.

**WOOL BLACK AND COLUMBIA FAST BLUE.**

Wool Black 4B and 6B, are two new black acid dyestuffs of the Actien Gesellschaft fuer Anilinfabrikation, Berlin, which are distinguished by high concentration and low price, are readily soluble, dye very level, and well through. Although they dye well in the usual way with bisulphate of soda, or Glauber salt and sulphuric acid in the bath, it is advisable to first boil materials which dye not easily through for half an hour with bisulphate, and then add the dye-stuff and Glauber salt and boil to shade. With 4-7 per cent. dyestuff, according to the character of the material, a full black is obtained, that with Wool Black 6B having an intense bluish bloom, while the 4B brand gives a deep black, which do not change under artificial light, and are fast to light, air, rubbing, wearing, washing, acids and perspiration, and do not suffer by carbonization. They may be shaded with acid dyestuffs, such as Acid Yellow, Azo-Acid Yellow, Mandarino, Guinea Green, etc. They are printed on wool with acetic acid, and dye silk fine shades with acetic acid or in a broken bast-soap bath. To preserve cotton fancy threads, the bath should be rather acid.

Columbia Fast Blue GG, of the Actien Gesellschaft fuer Anilinfabrikation, Berlin, is a new direct dyeing blue, which is dyed as usual and is claimed to be fast to acids and alkalis, also faster to light and chlorine than most substantive dyestuffs. It is discharged good white both with tin-salt and zinc-dust. In half-silk and half-wool it dyes in an alkaline bath almost exclusively the cotton. These colors may be had from A. W. Leitch, Hamilton, Ont., agent New York and Boston Dyewood Co.

**RECENT CANADIAN PATENTS.**

**OF INTEREST TO THE TEXTILE TRADES.**

No. 50,518—Collapsible curtain stretcher. Wilhelm Niemand, Newport, Ky.

No. 50,539—A piece of fabric on which is marked the outlines necessary to form a series of complete garments, in other words a roll of cloth with patterns ready marked for cutting. Annesley Kenealy, Bushey Grove, England.

No. 50,552—Dampening apparatus consisting of a rotary carrier and friction rolls, with a moistening mechanism. Canadian Fibre Chamois Co., Montreal, assignee of Arthur Stafford, Lancaster.

No. 50,656—A linen polisher having a lever run through the upper part of the polishing iron, with a handle on one end of the lever, the other end pressing against a roller, the idea of the lever being to give increased power to the operator. S. M. Douglas, Ingersoll, Ont.

No. 50,661—An ironing machine, consisting of a series of drums having ironing faces, over which the cloth is passed, one set of drums being stationary, and another set revolving by suitable gearing. F. C. Wendall, Brooklyn, N.Y.

No. 51,022—Mechanism for holding a spring window shade. Henry H. Forsyth, senr, and H. H. Forsyth, junr., Chicago, Ill.

No. 51,026—Suspender for drawers. H. P. Geisler, Saginaw, Michigan.

No. 51,029—A hem for a coat sleeve or trousers leg. One edge of the lining is sewn to the hem, the other edge to the sleeve or leg, the lining having a fold stitched to the hem in such a way that the fold will hold the sleeve or leg in its original length, and when the stitching of the fold is cut, the sleeve or leg can be lengthened to the extent of the fold. John R. Ball, Toronto.

No. 51,072—A dyeing machine having a perforated cylinder in the kettle, divided into compartments by longitudinal plates, and supported in the kettle by a central shaft, to which the plates are attached. There are doors in the sides of the cylinders for access to the compartments, and a central shaft for rotating the cylinder; the cover also having doors and a flue. Thos. B. Bowers, Chester, Pa.

No. 51,099—Electrical quarter-sewer and stopping device for knitting machines. The tension lever is provided at one end with a roller, under which the thread passes, and having a brush at the other bent end with electrical mechanism for throwing in a suitable

device for stopping the rotation of the shaft when a thread is broken Herbert Theodore Ballard, Toronto.

No. 51,110—An automatic knitting machine for hosiery. Louis Nap. Devon, Wm. and Harry Swinglehurst, Philadelphia, Pa.

No. 51,120—A machine for manufacturing mosaic floor cloth. Differently colored sheets of plastic material are passed between successive pressing rollers and a pattern drum, into the spaces of which squares of the plastic material are pressed in succession according to the color, the whole pattern being then pressed on to a travelling fabric backing. Wm. Mather, Salford Iron Works, Manchester, Eng.

No. 51,126—A method of treating mineral fibre for making non-conducting pipe-coverings and the like. David H Ferguson, Montreal.

No. 51,144—Button hole attachment for sewing machines. John Davis, Brooklyn, N.Y.

F. X. MARTIN, dry goods, Hull, Que., is reported to be offering 50 cents on the dollar, secured. It is but little more than a year ago that Mr. Martin arranged a settlement at 60 cents; in 1892 he got an extension, and the year previous a similar arrangement

THE T. H. Taylor Co., Ltd., Chatham, Ont., have recently placed in their woolen mill a fulling mill manufactured by H. W. Karch, Hespeler, Ont., a cloth washer by the well known firm of Young Bros., Almonte, Ont., and a hydro-extractor by the Goldie & McCulloch Co., of Galt, Ont.

**CHEMICALS AND DYESTUFFS.**

Business is dull and spring orders are behind those of last year. Sulphate copper is much stronger and is scarce, and castor oil is very firm. The following are current quotations in Montreal.

Bleaching powder.....	\$ 2 25	to \$ 2 50
Bicarb soda.....	2 25	" 2 35
Sal soda.....	0 70	" 0 75
Carbolic acid, 1 lb bottles ..	0 25	" 0 30
Caustic soda, 60° .....	1 90	" 2 00
Caustic soda, 70° .. .. .	2 25	" 2 35
Chlorate of potash.. .. .	0 13	" 0 18
Alum .. .. .	1 40	" 1 50
Copperas .. .. .	0 70	" 0 75
Sulphur flour .. .. .	1 50	" 1 75
Sulphur roll .. .. .	1 50	" 1 75
Sulphate of copper.....	4 75	" 5 50
White sugar of lead .....	0 07	" 0 08
Bich potash .. .. .	0 10	" 0 12
Sumac, Sicily, per ton .. .. .	65 00	" 70 00
Soda ash, 48° to 58° .. .	1 25	" 1 50
Chip logwood .. .. .	2 00	" 2 10
Castor oil.....	0 07	" 0 08
Cocconut oil .. .. .	0 06½	" 0 07

**A. KLIPSTEIN & COMP'Y**

122 PEARL STREET, NEW YORK

**Chemicals and Dyestuffs**

ANILINE COLORS OF EVERY KIND

SPECIALTIES

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

Also CAUSTIC POTASH FOR WOOL SCOURING

WRIGHT & DALLYN, Agents - - HAMILTON, Ont.

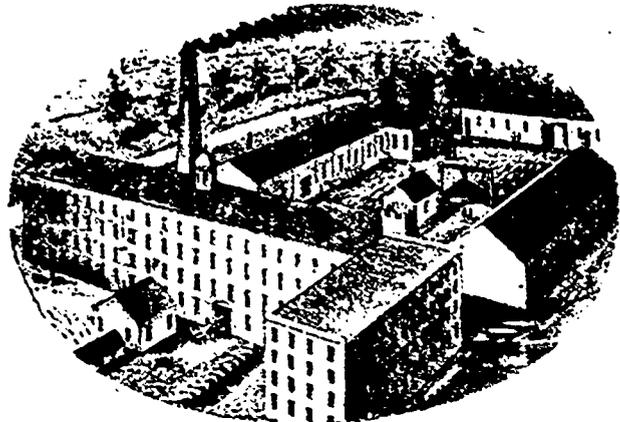
An English contemporary states that the largest power loom in the world has just been constructed by Robert Hall Sons, of Hope Foundry, Bury, for Porritt Bros and Austin, of Stubbins. It is for weaving woolen and felt for paper makers. The reed space is 28 feet, and a piece can be woven 27 feet wide. Its total length is 38 feet, its width 11 feet, and the approximate weight twenty tons. It is said that the next largest power loom in existence was made by the same firm for J Kenyon & Son, Bury. The latter produces a cloth about 25 feet wide.

The German *Bundersrath* publishes the following test for cotton in wool. Five grammes of the yarn are immersed in a beaker of one litre capacity containing 200 cubic centimetres of a ten per cent solution of caustic soda. The solution is then slowly heated (about twenty minutes), and gently boiled for about fifteen minutes. By this process the wool is completely dissolved. Dressed and finished yarns are previously treated with a 3 per cent solution of hydrochloric acid, and rinsed with hot water until litmus paper no longer shows the red reaction. After having dissolved the wool, as above explained, the liquid is filtered through a porcelain crucible four to five centimetres high, having a sieve with narrow meshes at the bottom, the latter, if necessary, being covered with a layer of asbestos. The crucible and the cotton fibres which remain at the bottom of it are slowly dried at a moderate temperature, then exposed to the air for some time on account of the hygroscopic properties of the fibres, and finally weighed. The difference in weight of the crucible with and without the fibres indicates the amount of cotton.

A PECULIAR fire escape has just been put in position in Nashville, Tenn., says the *Boston Journal of Commerce*. It is cylindrical in form, six feet in diameter, made of sheet steel. The chute

or slide is perfectly smooth, and is of such a shape that it successfully controls the speed of the body in descending, the speed being no greater at the bottom than at the commencement of the descent. The entrance to the fire escape is from windows over iron runways with wire railing through two folding doors opening inwardly, so that the moment the person enters the door immediately closes with a spring attachment which prevents any air entering to form a draft. On entering the doorway the person sits down, folds his or her arms, and before one is hardly aware of it, slides gradually down to the street. From the street the escape appears to be a lofty circular tower. Connected with it is an iron waterpipe extending to the top, with nozzles at each floor to which movable hose can be attached. There is also a stationary iron ladder adjacent for the use of the firemen, at the top of which is a pulley by means of which a rope drawn from below lifts the hosepipe to the desired position.

## Weston Woolen Mills



This valuable Seven-Set Mill, including 25 acres of Land, with 10 dwellings, etc., is now offered **FOR SALE**. It contains seven sets of 60-in manufacturing Cards, 2,500 Spindles (Tatham Mules), 45 Broad Looms, and all other machinery to match. It is advantageously situated on the banks of the Humber river, and has an excellent water power.

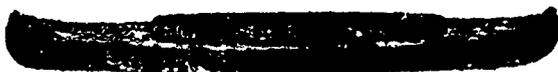
Weston is a suburb of Toronto, on the Main Lines of the Grand Trunk and Canadian Pacific Railways, having also an electric car service direct to Toronto.

As this fine property is offered at very reduced figures, an eminently favorable opportunity is afforded to intending purchasers.

I also have for sale, 1 set of 48-in. Cards, 2 sets of 60-in. Cards, 4 Tatham Mules, 20 Broad Looms; 2 English Gigs, 2 Chinchilla Machines, 8 60-in. Shoddy Cards, 2 Fulling Machines, 3 Shoddy Pickers, 1 Rag Duster, etc., etc.

GEORGE REID, 118 Duke St., Toronto.

## You Want a Canoe OR ROWBOAT



### WE HAVE THEM

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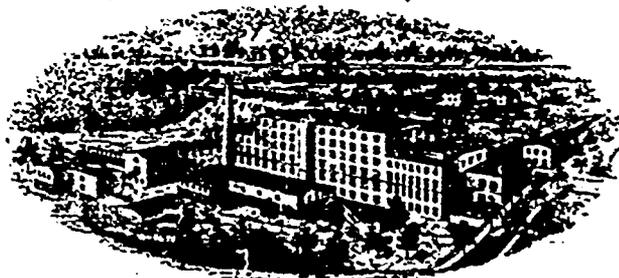
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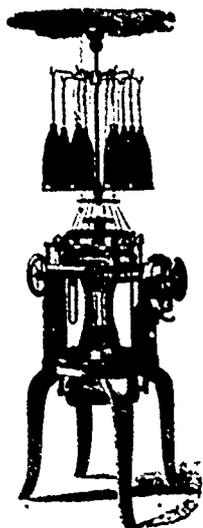
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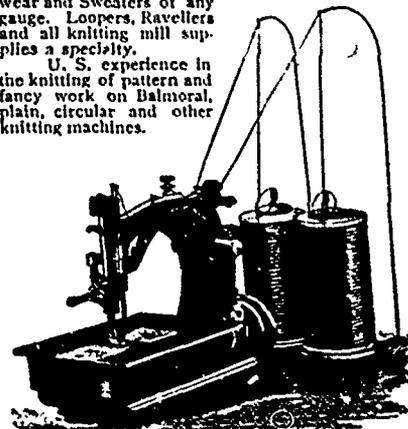
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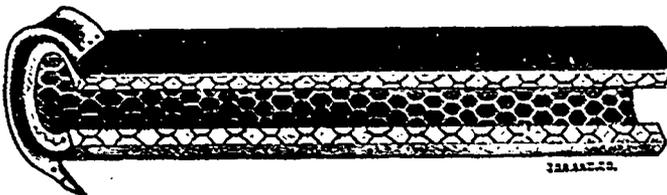
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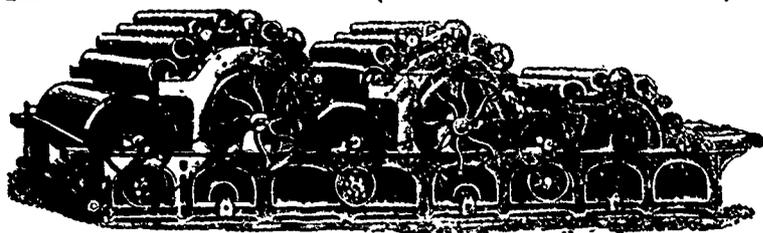
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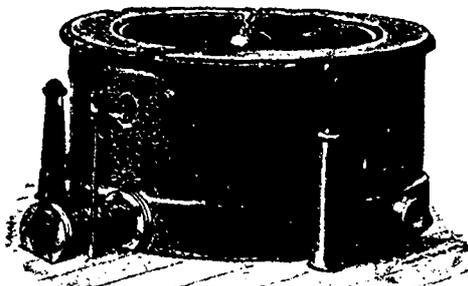
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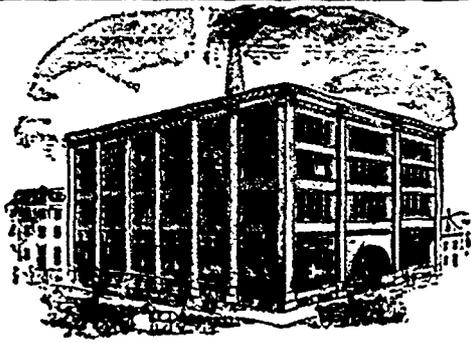
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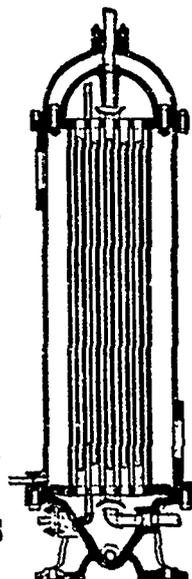
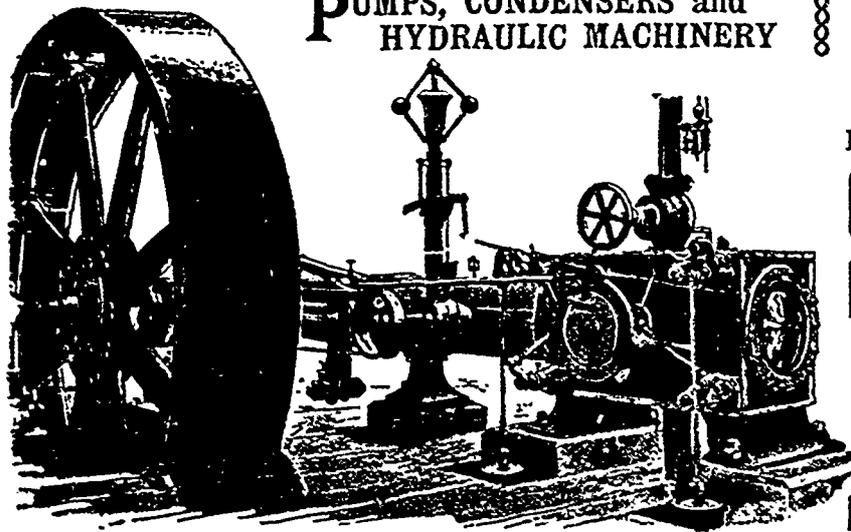
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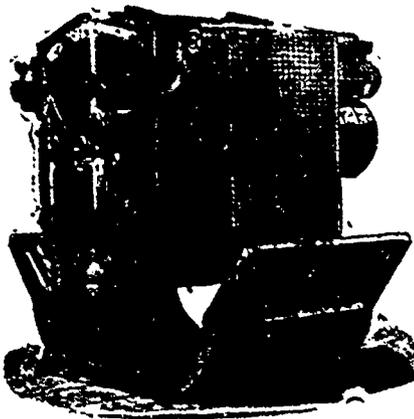
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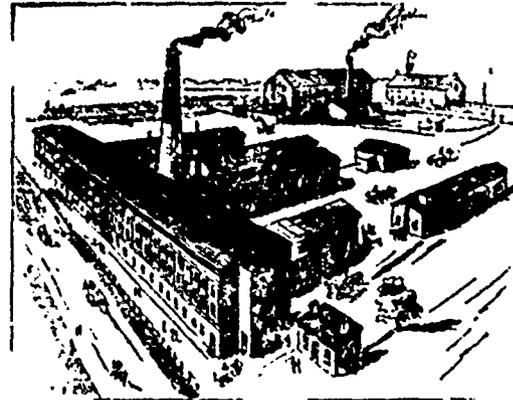
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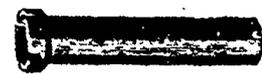
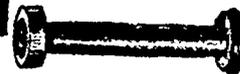
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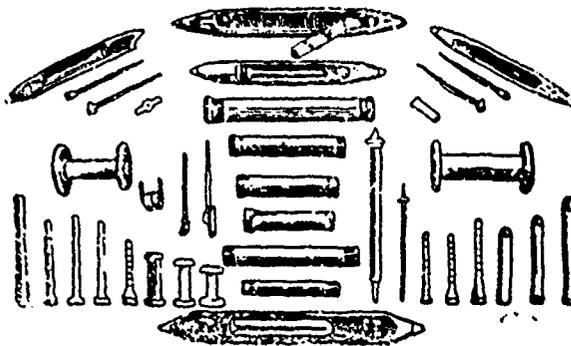
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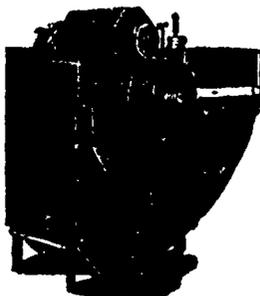
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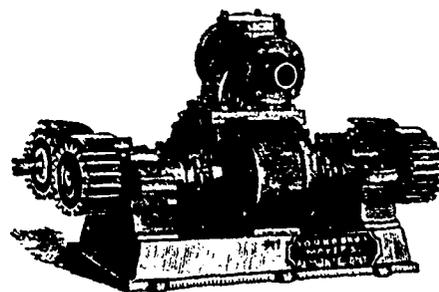


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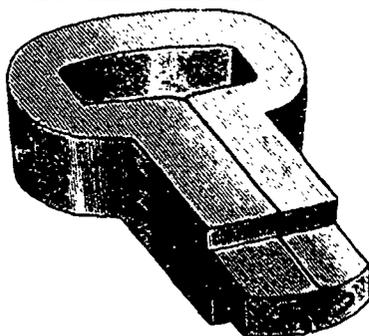


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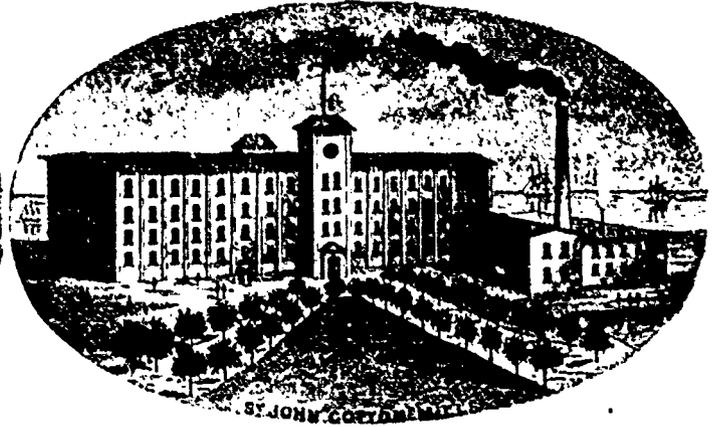
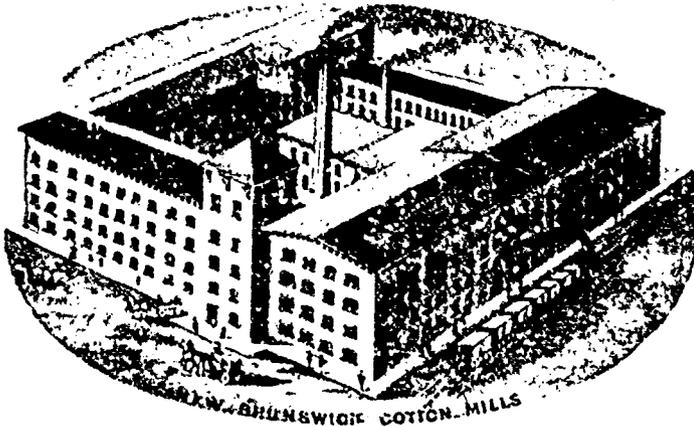


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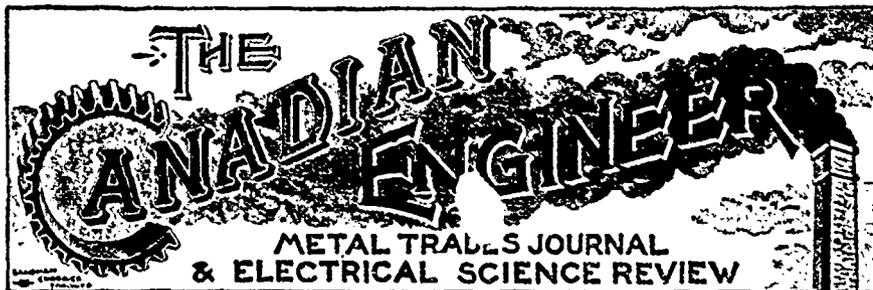


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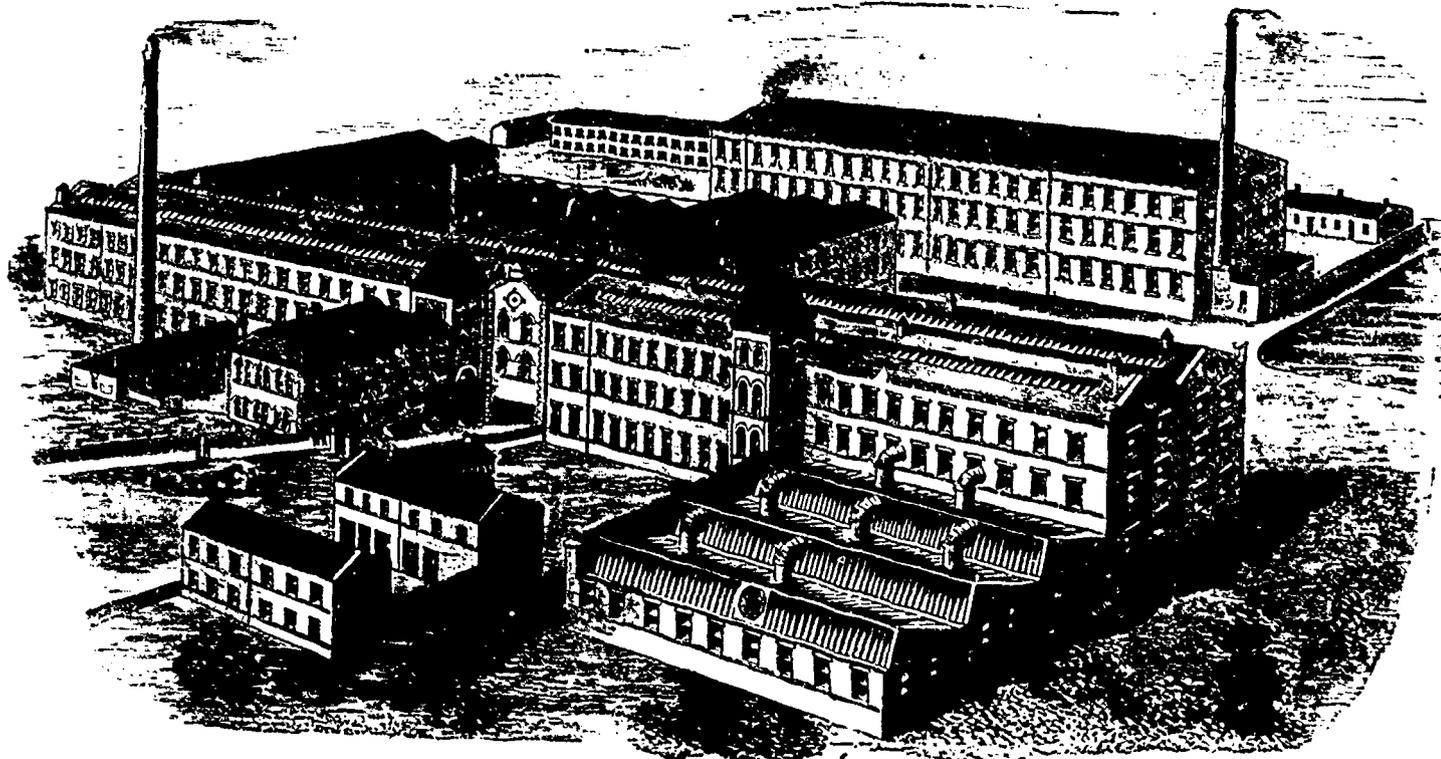
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**CARBONIZING WITH CHLORIDE OF ALUMINUM.**

A number of scientists have explained in a number of ways the manner in which chloride of aluminum acts in destroying vegetable substance. All these gentlemen agree that this salt in its relatively feeble action on the dye is the best for the purpose, and this is their only point of agreement. The economy in using Australian and South American wools alone shows the importance of such inquiry. The mechanical methods formerly used have been abandoned partly on account of their costliness, but by the use of chemical agents the vegetable matter adhering to the wool is pretty well destroyed, even in the case of cloth and other woven fabrics. The practical fundamental principle of this chemical action is the treatment of the tissue by means of a solution of sulphuric acid (four to five degrees by Beaume's aerometer) and the passing of the former afterwards through a stove, heated to 125 to 140 degrees C. This plan was patented by M. Frizon.

Wool carbonized by this method or process will take any fancy color, where acid is used as an ingredient, without neutralizing, and by subjecting it to a bath of sal soda, one degree in strength, after it has passed through the hot blast it will take any color. This I know by practical experience. Another manufacturer, M. Joly, proposed to replace the sulphuric acid with hydrochloride of alumina, and the experiment succeeded. In using alumina chloride, a liquor of six degrees Twaddle strength is sufficient to destroy all vegetable fibres, and is made as follows: Chloride of alumina of two degrees Twaddle, chloride of calcium of two Twaddle and water glass of two Twaddle. In mixing, a precipitate of calcium bisilicate is formed, which is held in suspension in the fluid. The solution contains also chloride of calcium, but the calcium bisilicate is the effective part. A part of the silica acid in the calcium bisilicate combines with the alumina or iron to alumina silicate or iron silicate both giving great intensity and constancy to the mordants in dyeing. The goods must be dried before carbonizing, and this is an important matter of detail. This operation is effected slowly at 212 degrees F., and the temperature must not be raised or the wool will take on a yellowish tinge. The carbonizing chamber should be carefully ventilated in order to remove all vapor, and after the operation the wool must be thoroughly washed in plenty of water to remove all trace of acid. This must be done without adding alkali.

The authors of the communication have made numerous experiments to determine the behavior of cellulose and ligneous matter, as well as wools, in the presence of a great number of chemical agents. The main facts are given as follows: That cellulose and ligneous matter become disorganized under the action of the following chemical agents, provided that the tissue dried in the centrifugal machine after inhibition be at once placed in a stove at a temperature of 140 degrees sulphuric acid, hydrochlorate of alumina, hydrochloric acid, nitric acid, the chloride of zinc, iron, tin, alumina, the bisulphate of potash, chrome, alum, boric acid, acid phosphate of lime and oxalic acid. The first effect produced by the agents which have the property of destroying vegetable matter under the conditions laid down above, is to take away a portion of the water contained in the vegetable matter and to carbonize it.

The *Dry Goods Economist*, of New York, is taking part in the agitation for the metric system of measurement. Over in England they are even more busy, as they are there agitating for the decimal currency as well.

**CUSTOMS DECISIONS.**

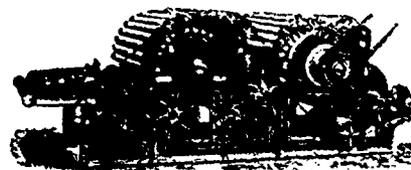
The Board of Customs has rendered the following decisions, which, having received the approval of the Controller of Customs, John F. Wood, now have the force of law.—Jute rugs, 30 p.c.; felt hat bodies, 30 p.c.; ladies' belt and garter buckles, for the adornment of the person, 25 p.c.; shirt, collar and cuff studs (except those made wholly of bone), 25 p.c.; straw boards, lined or covered with paper, 35 p.c.; lactic acid, for medicinal, chemical, or manufacturing purposes, free; washing machines, stationary, 27½ p.c.; portable 30 p.c.; carpet stretchers, 35 p.c.; olive oil, for use in lubricating machinery, free, grey or unbleached cotton tubing, for bicycle tires, 22½ p.c.; artists' prepared canvas of linen or cotton, 27½ p.c.

The trade in the United States seems to be in no danger from tariff tinkering until after the elections. The bill now before the House will remain there, but to all practical purposes it is dead.

The following figures show that England is fast recovering from the big slump in carpet exports during 1894: For the month ending August 31st, 1894, the exports to Canada were 143,900 yards, valued at \$13,351, and for the same period in 1895, they amounted to 184,500 yards, valued at \$17,775.

In the woolen industry in Italy are engaged 345,638 spindles and 10,003 looms, of which 6,161 are power looms, 3,578 hand looms, and 244 jacquard looms. These are driven by engines representing a total of 18,242 horse power, of which 8,443 are steam and 9,799 are water driven. Three thousand operatives are employed in 486 establishments, which are principally situated in the provinces of Turin, Novara, Vicenza, Amland, Salerno, and Caserta. The total production of woolen cloth amounts to 26 million metres, of which about one-third is woven on hand looms.

A SIMPLE but effective practice is in vogue in Germany for determining, without the aid of a chemist, whether a fabric of silk or wool is free from admixture of cotton fibres, of flax, china grass or other vegetable constituents. A piece of the stuff to be examined, say about 3 inches square, is, after careful cleaning, plunged into strong sulphuric acid, water being afterward added, and the whole boiled. In about five minutes the fluid is poured into a clean vessel and made strongly alkaline by saturation with caustic soda, then adding a few drops of dissolved orchil, and the mixture is warmed for several minutes up to a temperature of 180 degrees. Now, if only one per cent of vegetable fibres exists in the fabric, the reddish violet color of the orchil is precipitated, or, if this takes place only after heating for more than five minutes, the quantity amounts to less than one per cent. It is absolutely necessary, however, that starch should be removed carefully from the stuff to be examined, as the presence of that substance vitiate the result. In testing goods alleged to be silk, the result is attained more easily by plunging the sample into hydrochloric acid, the fibre of silk being very soluble in such acid, and if the material contains wool or cotton it remains behind.

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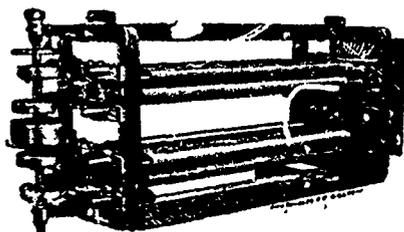
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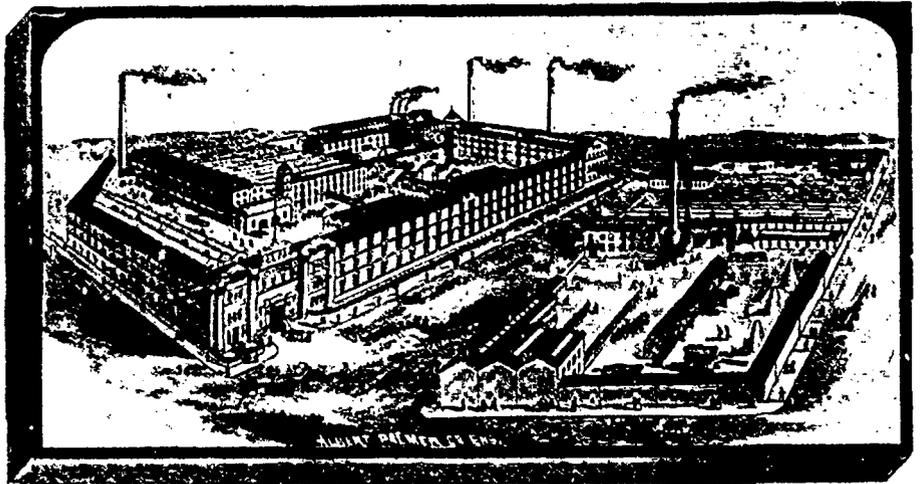
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