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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XVIII. TORONTO AND MONTREAL, SEPTEMBER, 1901. No. 9.

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CONTENTS OF THIS NUMBER:

THE TEXTILE OUTLOOK.

The outlook for the textile manufacturing trades at the present time is none too bright in any quarter of the world. Though many complaints are heard even from Great Britain, there is yet some comfort in knowing that the prospects of this branch of the trade in the mother country are the least blue of any nation across the Atlantic. Taking the nations of Europe, Germany and Austria are probably suffering most. The former country is now waking up from the effects of a financial swelled head. Since the war with France, manufacturing has expanded in a remarkable way, and speculation has gone on with it until the inevitable collapse has come. And now, just as the German press has become convinced of its position as a world power, and the Emperor has nursed his ambitious scheme of a great navy almost to fruition, comes the blighting frost, accompanying the fall in the financial thermometer. And the unfortunate feature of the situation is that just at the time when the financial and other concerns, that were built up by a rotten system of speculation, are tottering here and there over the country bringing distress and ruin to manufacturers and work people, the German Government's new tariff is announced, in which the agrarian interests are appeased by tremendous duties on grain and food stuffs, the rise in the price of which must only accentuate the distress of the manufacturers, especially those in the textile trades, by raising the cost of living, while damaging the prospects of German trade abroad. The feeling between Germany and Canada cannot be improved by that Government's dealings with Canada, even although Germany might be technically right in the step she took when Canada gave Great Britain the preference in the tariff. Canada took German goods in 1898 to the value of $5,584,014, and this trade increased to $8,383,498 in 1900, notwithstanding the preference of one-third which we gave to British goods; and while, on the other hand, Germany's import of Canadian grain, which amounted to $867,000 in 1898, fell to $230,000 in 1900, the present action of Germany is designed to kill off even this small item of reciprocity. Meantime, the Canadian Government does not formulate any proposal to deal with the situation or to remedy the state of things whereby German goods are smuggled into Canada via Great Britain, and under cover of the preferential tariff, to a large extent, outside the figures just quoted.

The depression in German manufactures comes at a most unhappy juncture for that country, when an exceptionally poor harvest is being gathered in, and a political upheaval, or at the least a period of great distress seems in store for that Empire, whose press and people have for the last two years taken a peculiar delight in gloating over the troubles of Great Britain.

As to the textile trade of the United States, the Textile World says: "The woolen and worsted heavyweight business this season has been far from sufficient

to keep the looms in this country busy, and there are suggestions made that things would be different if we had free wool. Undoubtedly they would. Under the last free wool regime things were so different that no one wants them repeated, except the few who thrive on the misfortune of others. In the cotton business, this clamor for free raw material cannot be made because cotton is free. The remedy most frequently suggested is the enlargement of our foreign trade. This, however, takes much time and is not available at once. Curtailment seems to be the only remedy in sight, and is being adopted, although not to the extent which conditions require, if we can judge by the Fall River print cloth market; here we find the stock of goods larger at the end of the shut down than at the beginning. In all branches of textile manufacturing, the same monotonous depression prevails throughout the world. The idle silk looms of Paterson are duplicated in Lyons. The unsatisfactory condition of woolen manufacturing in this country finds its counterpart in all of the European woolen districts. The cotton manufacturers of this country, who are face to face with a large accumulation of unsold merchandise, and who are seeking to remedy the trouble by cutting the prices of goods, shutting down mills and reducing wages, will find their fellow manufacturers of England and Continental Europe in exactly the same predicament as themselves. The knit business is also suffering from similar conditions irrespective of national boundaries."

The textile trades are not alone sufferers in this conjunction, and it is likely there will be a period of general contraction in the business of the world. A writer in one of the London papers gives that view of how, when the limbs of the world's finances are paralyzed, the head itself feels the effects. He says:

"If we were dependent upon no one but ourselves our state of financial congestion would probably not involve any particular danger. It would, it is true, necessitate a financial rest and engender a state of inactivity, but it would not necessarily lead to collapse. But our wide-world interests, the international ramifications of finance and the close sympathy and intimate relations subsisting between our center and every other, compel us to be on our guard and expose us to the danger of a collapse. And for that reason it is unpleasant to notice that in all foreign and financial centers matters are assuming a graver aspect every day. There is no question that in Germany people have overshot the mark, have been guilty of over-trading and doubtful and rotten financing, and have fully deserved the collapse which seems imminent, or, perhaps, one may say in progress. In Belgium there has been a period of gambling and over-financing, which is just at present leading to dire consequences. In Austria matters stagnate; Russia has now been for a couple of years in the throes of a crisis, which we do not fully appreciate, because we have taken such a small share in financing the Czar's Empire. In France there is, after much financial excess, congestion and exhaustion closely akin to ours. And one shudders to think of what will happen in the United States when the day of reckoning comes for the undoubted follies committed during the present boom. The huge trusts, the railway consolidations, the "community of interest," and the various other delusions upon which the "biggest bull boom of modern times" has been founded must bring about collapse some day. Now we in London could very well afford to look upon these American transgressions with equanimity, were it not that London, in spite of American ambitions, still is the center of finance. From this city of ours direct wires, so to speak, run into the office of every big institution abroad, and the first effect of strain in any foreign financial center is a tendency to seek relief in London. Only a fortnight ago our stock market was slumping, because Germany effected forced realizations here; only a few days ago it was weak, because New York had to sell the consols which it took up with so much bounce and bluster; and after New York may come Brussels and Antwerp, Petersburg or Buenos Ayres, Paris and Rio de Janeiro. It is this liability to fill gaps all over the world which causes our weakness in days of stress, just as it causes our greatness in days of prosperity. In finance we do not enjoy "splendid isolation;" we are, on the contrary, the sensitive center of a huge system, and at once feel the effect of anything that happens in any part of the world. And it is because our financiers know this that they are just now watching developments abroad with such unremitting attention. But they are on their guard, and that is something. All prudent business men are taking in sail and preparing for the gales that the autumn may bring. Therein lies our hope that we may escape another crisis, though it is to be feared that we cannot expect to escape a considerable spell of stagnation and liquidation in the world of finance.

For the CANADIAN JOURNAL OF FABRICS.

WOOL FOR THE MANUFACTURE OF WORSTED SUITINGS.

The successful manufacturer of worsted suitings requires a good, practical knowledge of the effects produced by a combination of the various grades of wool available for this business. It is also of great importance to know the per cent. shrinkage of the various kinds of wool in order to be most successful in the selection, and to produce the yarn at the lowest possible cost. As is known, the difference in woolen and worsted yarn is substantially as follows: (a) Difference in the length of the wool. (b) Difference in the method of forming the fibers into a thread. The improved wool-combs of to-day are no longer confined to a long

staple for successful results, but are equally successful in preparing wool fibers even less than two inches in length. On the other hand, the woolen cards of recent build are capable of carding wool fully 5-in. in length without injury to the staple. This could not be accomplished thirty years ago, hence that class of wool in which the fibers were over three inches in length was wholly limited to the combing process, which gave rise to the term worsted fibers, for they were too long for the woolen cards of those days, to open and disentangle without materially injuring their structure. Then all wools in which the fibers were under three inches in length were confined to the carding process for they were too short for the mechanism of the old style wool-combs to handle properly. All the parts of the fleece, which are characterized by their fine, uniform and lustrous features, are assorted from the ordinary qualities and set aside for manufacture into worsted yarns or fabrics. Less regard is devoted to the length of the staple than to its symmetry of structure and natural brilliancy of character. The brilliancy, strength and elasticity of worsted goods are particularly distinguished features. Another valuable quality worthy of note is the solid, compact form which worsted yarns invariably impart to the fabric. A fact in connection with worsted yarns is that, although the principal characteristic of the worsted fabric is obtained by the nature of the weave, it frequently requires the aid of the miscroscope to detect the structure of that weave. Therefore, it is plain that this class of yarns is peculiarly adapted for the novel design effects in worsted patterns. The clear, well rounded surface of the worsted yarn greatly assists in the development of any design in which it may appear. The unsuitable fibers, extracted from the fleece, are utilized in yarns manufactured under the woolen thread system. Thus we see that the material of which it is made represents the best types of the fleece, and also because the process of its construction is designed with a view to consolidate the filaments with great uniformity. The decided dissimilarity of the character of the woolen and worsted threads is comprehended when we realize that in the former the main object sought is to produce one continuous body of fibers firmly clustered together in one compact mass, which gradually decreases in density toward the outer edges.

SELECTION OF THE WOOL.

The shrewd manufacturer will be guided by his past experience in the selection of wool, be it a fine or low grade of wool. He is careful to buy such lots as contain the largest per cent. of that which can be used at his mill to good advantage. The task of selecting wool for this particular class of manufacture is one of great importance. Comparatively few persons, outside of those directly connected with the handling of wool, from the wool-grower to the sorting room, have more than a faint idea of the great varieties of wool produced and put on the market for manufacturing worsteds. And while a large majority of those wools may be said to hold the same general characteristics, as regards appearances and handle, we would not hesitate to say that the experienced wool buyer or manufacturer would have little difficulty in deciding as to which of those wools was best adapted to his requirements. Having selected the most desirable wool, we shall presume the same to be at the manager's disposal, from which to manufacture worsted yarn. The preliminary operations necessarily vary with the nature and quality of wool in hand. Now, although it would appear that the variation in the nature and quality of wool is the only reasonable difference for any variation in the method of preparing it for the card, there are, nevertheless, as many systems for the preparation of the same class and quality of wool as there are systems for the various grades and qualities of stock. Hence, the number of systems in use might be found to be the square of the number of grades of wool. Some of the systems are good on the whole, some in part, and some very objectionable to most practical men, and are only used through ignorance of the true requirements of that particular class of wool.

SORTING.

Where we find inefficient men in charge of sorting rooms, the item of tar clips and general wastage is large, because the men can do the clipping as they choose, and to clip the tar with one-half inch of wool is easier than to clip close, and this wool which is clipped off with the tar will sell only for a small price, wherein, if the tar was clipped close, this wool would be of as much value as any other part of the fleece. In fact, to get good results, the manufacturer must follow the wool from the sorting, scouring, drying, picking and oiling to the final process, in order to see to it that wastes are avoided and that the operations are correctly performed. Taking the wool in the fleece, the first waste we get is strings, which are no small item, as anyone will learn if he will keep account of the amount taken off a 25,000 or 50,000 lot. Next come tar clips, and these, as of strings, amount to several hundred pounds in a year in the sorting room of a large mill. In the above item of tar clips, it depends largely on the vigilance of the foreman as to whether he is inclined to let his men do about as they please.

YARN WASTES.

I have seen many ways where large quantities of yarn waste are unnecessarily made about the mill. The yarn waste is not the whole item of waste made, but many pounds of good yarn is woven into goods, which (through the negligence of the weaver or the person in charge), are imperfect and below the standard number of picks and weight, and which are obliged to be

sold as seconds. This means sold less than cost to make them.

PROPER FIBER.

If the yarns contain some long, wiry fiber, the spinner has no option but to cater to the wants of the long, wiry stock by putting on a gear and fixing the scroll on his machine so as to carry his carriage fast enough to get out of the way of the twist, else he will draw the whole thing through the rollers. Now, if you force him to draw such stock fast by making the roping heavy you have forced him to draw the fiber that composes a part of that stock, into twists and lumps, though such being drawn faster than it ought to be. Nothing is left but a mutilated and disembodied wreck. However, if one makes up a batch of long and short stock having nearer the natural qualities than the compound noticed, then the results may be improved. In one mill they put some gig flocks into some mixes intended for worsted suitings. Gig flocks may be made use of in certain goods if properly and carefully prepared. It should be kept separate from the other waste, the white being kept together in one place. Run the gig flocks through a waste card; this takes the teasels out and works it up so that we can use it in some kinds of yarn, if it is not wanted for flocks. But I would avoid using gig flocks in batches for worsted suitings.

DYEING.

Bad work is sometimes caused in the dye house. I may say there are many causes and there are many cures. Take the scouring of the wool; if the liquor is too hot, it will strike the grease in the wool and cause twists in the roping, or if the liquor is not thoroughly washed out of the wool, it will have the same result and will develop itself when the yarns or goods are colored. In one mill, where they made worsted piece dye goods, the machinery was examined and all defective adjustment remedied. For example, at one machine a worn guide leading to the vat would occasionally catch a knot in the goods. This was one of a dozen little defects attended to. The floors were oily under many machines, while often some of the bearings of the machines appeared quite hot and dry. All cups were cleaned out, drips put into shape, oil holes probed, gummed bearings treated and the parts left in good condition. Imperfections were reduced.

BENEFITED BY A SYSTEM.

Undoubtedly many worsted mills are not paying a profit. A record should be kept of all the operations in respect of the conversion of raw material into partly or wholly manufactured stock, and the expenditure of labor in the process. The accounts that were first charged with the original material and labor should be credited, and new accounts, corresponding to the product, charged. If those accounts represent yarns at only an intermediate stage of manufacture, they are again credited from the records of further manufacturing operations, until final accounts, corresponding to the finished products, fully classified, are charged. As the product is disposed of, these last accounts are credited.

CARE IN CARDING.

In carding worsted yarns, a personal examination of the cards is advised. I first start in a lot, see that it runs finely, rings all strip well, makes a nice round thread, and so far all is well. After running a while, I weigh top and bottom spools, and find top one-quarter run too heavy. I set off top offer, or change gear to drive top rub rolls faster, or bottom slower. I always put top and bottom spools together, and never had any fault found because they were not alike on all kinds of work. On fine stock it is very easy; on coarse stock you may have to set off top doffer, and that is the stock that will bear it. It certainly is not one-half as hard to keep top and bottom alike as to keep the sides alike on the same spool. When the spools get full, I weigh the side threads and find they are fine, but the wide side of feed is the finest. I lengthen out traverse belt, move lifting catch, and iron pulley spiked strap runs on. Started up again, the work is better, but not right. Then I notice that the drawing, as it is carried to traverse from overhead rig, was rather tight as it came to each end of feed. I put on smaller gear and tried again. It did not keep up with second breaker. Then an idea struck me. I took the roving from upright rod, removed the carrier rod, sawed two sides of the seat, then flattened one end of the carrier rod, put in rivet so it would work up or down, took out set screw, and put in its place with collar to keep it on. I put on a wire spring, then fastened end of carrier rod to traverse with lace string. Started up again, and that was an improvement, instead of drawing being tight at ends of feed, it was tight in center, if anywhere. I have in this article taken up the management in buying, the sorting and preparing for scouring, carding, etc. Possibly the weaving and finishing departments may appear in my next. "WEAVER."

LUSTRING WOOLENS AND WORSTEDS.

The process of imparting a silky lustre to cotton goods by "mercerizing' is now more or less familiar to all textile manufacturers, though it is not so long since the idea was so novel as to be put down among the numerous "fakes" of the trade. Mercerizing has been a success to such an extent as to make the name a common noun already. Now we hear that several European manufacturers are successfully using secret processes for rendering animal fibers as glossy as silk, and that some of the woolen and worsted goods so

treated have found their way to the United States and Canada. The processes possibly have a common origin, though supposed to be a secret. The Textile World, in an endeavor to hit upon the secret, says: "In a German work, by Carl Suvern, recently published, the various patents for giving a silk lustre to fibers are mentioned. A French process consists in employing pure nitro-cellulose and sulphuric acid. The fibers are passed through this mixture, and afterwards through a mixture of silk and acetic acid at a temperature of 190 degrees C. The inventor of this process afterwards secured a second patent, in which a mixture of silk in oxalic acid, ammonia, and soda or potash was employed for coating the fiber. The Hosemann process consists in treating the fiber in an alkaline solution of silk, and then subjecting the goods to a sulphuric acid bath. By the Aubert method vegetable fibers are given the appearance of silk by treating them first in a sugar solution, then nitrating and afterward treating with tannic acid, and a double tartrate of antimony. By the Brodback patent, the cotton is hydrated with dilute acid or alkali solutions, and afterwards alternately treated with a concentrated solution of silk in alkali or in copper oxide of ammonia, and with a mixture of silk and muriatic, phosphoric or sulphuric acid. The surplus silk is then removed by rinsing in acidified water, and the lustre is given to the cloth by friction. By the Jenny process, a mixture of equal parts of nitro-cellulose and alcohol is employed, which are combined in a solution of caustic alkali. The goods are impregnated with this mixture, and afterwards passed through a diluted solution of sulphuric acid to fasten the material on the fiber. The Ungnad process consists in dissolving silk in alkali. The vegetable fiber is then immersed in this solution, and afterwards treated in a bath of double carbonated alkali, or subjected to the action of carbonic acid gas. The Woltereck process consists in treating the cotton or other fiber in a mixture of cellulose and copper oxide of ammonia, nitro-cellulose, or in the cellulose carbonate, prepared according to the Cross and Bevan processes. By means of dilute solutions of acid or of metallic salts the cellulose is deposited on the fiber in a thin layer, which gives the fiber the appearance, and in some respects, the properties of a natural silk."

It does not appear, however, that these processes are applicable to woolens, and we shall await with interest the further development of a process which will be of particular interest to Canadians.

—The electrical installation in the Dominion Cotton Mills Co.'s mills, Montreal, described in our August number, is not only the largest in the amount of power, but the most varied in the application of that power, of any textile mill in the world. The next largest is also that of a Canadian cotton mill—the Imperial cotton mill, of Hamilton.

—A correspondent of a Rio de Janeiro paper draws attention to the fiber of the guaxima, which grows wild everywhere, but is found in largest quantities on the low lands near the sea. It is believed that this fiber would prove an excellent substitute for jute, which is all imported, and when cultivated prove the basis of an important industry. The threads are long and very strong, and will resist the action of water: the fiber being used by fishermen on the coast for their nets, which last for years if soaked in a tincture of aroeira bark. The guaxima fiber does not require long maceration in vessels, as is the case with jute. Immersion for a few days in running water is sufficient to loosen the green outer bark with the hands, after which the rods are exposed to the sun in order to dry the woody part; this then contracts and allows the fibers to be easily separated. A sample was to be sent to England to be spun and woven, and its uses and application thoroughly investigated.

EXTRACTING GREASE FROM WOOL.

The employment of tetrachloride of carbon for extracting fatty matters from wool affords considerable advantages over the processes generally in use. On the one hand it gives greater facilities for regaining the product employed, and the fatty matters extracted from the materials treated, as compared with the ordinary washing process with baths of soda and soap; and, on the other hand, it affords perfect security as regards non-inflammability and non-explosibility, as compared with the use of naphtha, benzene, petroleum or the like, which substances are not only dangerous in themselves, but their vapours, mixed with air, form highly explosive bodies. The use of tetrachloride of carbon also affords advantages from an economic point of view, because, owing to its non-inflammable and non-explosive nature, it does not require the localities in which it is employed to be isolated from the other parts of the works, and it obviates the payment of high insurance premiums. The extraction of fat by tetrachloride of carbon can be applied as economically to small quantities of the material to be treated as to large quantities, a feature of great advantage in small works.

A process which has been adopted by a Belgian firm of manufacturers appears to be giving great satisfaction. Their apparatus allows, according to circumstances, either a circulation of the materials to be treated through the stationary tetrachloride of carbon, or a circulation of the tetrachloride of carbon through the stationary materials to be treated, or a combination of the two systems can be employed, whereby the materials to be treated are caused to travel through a shower of the tetrachloride. The apparatus makes use of the property of the tetrachloride of carbon—namely, its being specifically heavier than water—in order during either the whole or only a part of the operation, to effect the separation of the tetrachloride from the substances treated and to protect the tetrachloride against all contact with the atmospheric air, and consequently against evaporation.

In the first of the three above-mentioned cases the operation of extracting the fatty matter is effected in open vessels; in the other two cases it is effected in closed vessels; the tetrachloride is in all three cases protected against contact with the atmosphere after the fat extraction has been effected, and it is separated from the materials treated by means of the water which covers it. The separation of tetrachloride from the materials

.reated can therefore be effected in all three cases mechanically in water (by washing machines), owing to the specific gravity of the tetrachloride; but it can also be effected in closed vessels by means either of heat, of vacuum, or by a current of hot air, or of two or more of these means combined.

Fig. 1 shows a sectional elevation of an apparatus, the action of which is based upon the circulation of materials to be treated through the tetrachloride of carbon. The wool or other matter to be treated, from which may be previously extracted by a preliminary treatment of the ordinary kind the salts soluble in water and the earthy matters, is introduced dry or moist through a hopper at A directly into the tetrachloride of carbon (either cold or slightly heated) in the chamber B, the material being introduced in such quantity through the hopper A as to practically close this against any escape of tetrachloride vapor.

When no material is being fed in, the evaporation is prevented by pouring a small quantity of water into the hopper A, which, in floating on the tetrachloride, prevents contact with the atmosphere. The materials immersed in the tetrachloride chamber B are subject to the action of a propelling compressing and raising device C which pushes the same by degrees in the direction of the compressing rollers

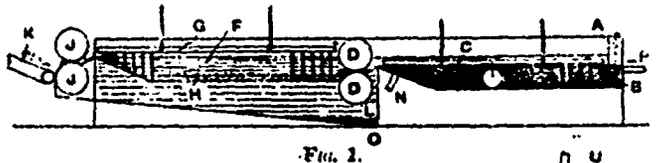


Fig. 1.

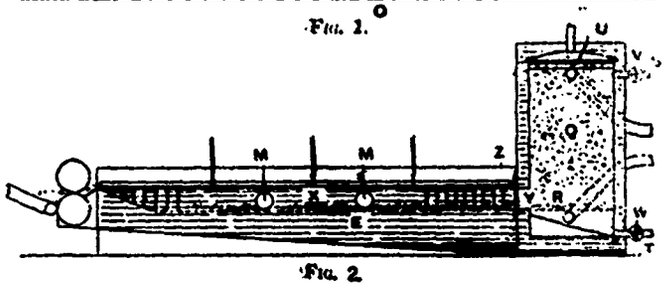


Fig. 2.

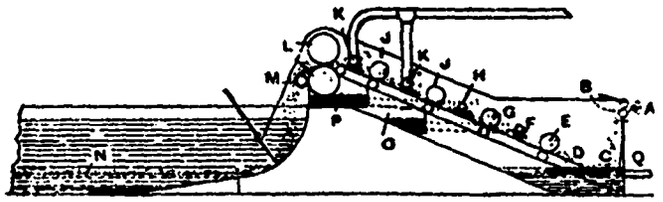


Fig 3.

D, which expresses the greater part of the tetrachloride of carbon containing the extracted fatty matter from the material treated. This then passes into a bath of water F, which may either be pure or slightly saponaceous, and either cold or heated. Here the material is again gradually fed forward by means of a propelling compressing and raising device G over a perforated plate H towards another pair of compressed rollers J, which express the last traces of tetrachloride. The treated materials are then conveyed by means of a travelling apron K to any locality required.

The tetrachloride separated at F in the presence of water from the materials under treatment, passes down through the perforated plate H, and collects at L, where there will also collect the portions of tetrachloride which are expressed by the rollers D. The water in F will always remain at the same level along the whole length of the apparatus, so as to keep the tetrachloride covered at every point, and thus prevent evaporation. Pure tetrachloride of carbon is supplied at N, while that which has taken up the extracted fatty matter is conducted away through pipes O and P to the distilling apparatus.

Fig. 2 shows a longitudinal section of an apparatus arranged for the circulation of tetrachloride of carbon through the stationary materials to be treated, which, as in the first case, may have been subjected to a preliminary treatment for the removal of soluble salts and earthy matters. They are enclosed in an air-tight cylinder Q provided with a double bottom R of perforated sheet metal, and which is itself immersed in an outer vessel filled with water, in order to prevent all possible loss of tetrachloride of carbon, and to allow of the vessel Q being heated as in a water bath. A current of tetrachloride is made to flow through the vessel Q, being either introduced through the conduit at S and made to flow downwards through the material to the discharge pipe at T, or the tetrachloride may be introduced at T and discharged at S. When all the fatty matter has been extracted, the greater part of the tetrachloride is expressed from the material by means of a perforated piston U. The cocks V and W on the pipes S and T are then closed, and on opening a slide Z, the charge of material is made to pass through a passage Y into the water contained in the tank X.

Here the material is gradually fed forward over a perforated plate E by means of a propelling compressing and raising device M, and is made to pass through the end compressing rollers. The tetrachloride, in separating by gravity from the water contained in the tank X, falls through the perforated plate E and is collected at the bottom of the tank. Any tetrachloride that may have escaped through the joints of the cover of the vessel Q will collect in the outer casing. The tetrachloride after circulating through the material in Q, and consequently becoming charged with the fatty matter, is led away through the pipe T to the distilling apparatus.

Instead of discharging the material from the vessel Q after treatment as described, it may be dried by evaporation in the cylinder itself. For this purpose, after having compressed the material by the piston U for removing the greater part of the tetrachloride of carbon, the cocks V and W are closed, and the water surrounding the cylinder Q is heated to a suitable temperature, and an exhaust is applied, both at the upper and the lower part of the charge by means of two pipes. To accelerate the evaporation of the tetrachloride, a current of hot air may be passed through the pipes, entering at one and escaping at the other, which hot air will evaporate and carry off the last traces of tetrachloride from the charge of material. The tetrachloride of carbon vapor thus removed is conveyed away into a suitable condensing apparatus.

Fig. 3 shows a longitudinal section of an apparatus in which the material to be treated is passed through successive showers of tetrachloride of carbon. The material to be treated after the preliminary extraction of the soluble salts and earthy matters before stated, is introduced at A between two small feeding rollers B, and falls directly into a body of tetrachloride of carbon at C. An endless travelling apron D carries the material upward beneath a compressing roller E, and then under a shower of tetrachloride at F, thence under another compressing roller G, and under a second shower of tetrachloride at H, and so on under two other rollers J, alternating with two other showers of tetrachloride K; finally the material is carried through larger compressing rollers L, whence it is propelled by a grooved roller M into a body of water contained in a washing machine, on the bottom of which, situated under the false bottom N of perforated sheet metal, will collect any tetrachloride that may have been carried along with the material and that will separate therefrom in the presence of water. It is to be observed that the supply of tetrachloride for the shower at F is taken from the tetrachloride of the shower at K after it has passed through a layer of the material to be treated be-

tween the rollers J, this supply being collected at the tank O, and also that the supply for the shower at H is taken from the tetrachloride which is expressed by the rollers L, and collected in the tank P; the showers at K are supplied with pure tetrachloride of carbon. The tetrachloride of carbon charged with the extracted fatty matters which collects at the bottom of the apparatus is drawn off through a pipe at Q and conveyed to the distilling apparatus.—Textile Manufacturer.

Textile Design

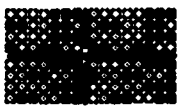
BY ROBERTS BEAUMONT IN TEXTILE RECORDER.

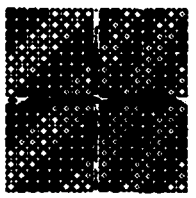
Small patterns are still amongst the most successful for worsted trouserings as regards selling quality. The simple stripes given in Designs 1 to 4 may be woven in either 2/28's yarn with 68 threads and

Design 1.

Design 2.

64 picks per inch, or in 2/48's with 80 threads and 72 picks per inch. They are very dissimilar in character, Design 1 being composed of up-





Design 3. Design 4.

right twill and a fancy mat weave; Design 2 of a broken mayo angled; Design 3 of twill and weft rib, the twill running through the design underneath the rib; and Design 4 of twills running at 45° and 60° respectively.

THE METRIC SYSTEM OF MEASURES AND WEIGHTS.

The Dyers' Bulletin of Philadelphia has the following appreciation of our recently issued Chart of the Metric System of Weights and Measures: "Everybody who uses it, and has used the antiquated system of former times, knows its unquestionable advantages of uniformity, regularity and an unalterable basis. Every means to educate the people, especially the growing generation, for the use of the new system, should be put in operation, notwithstanding the assertions of its opponents that its very simplicity and uniformity is confusing, and that the English-speaking people would never learn a lot of foreign words signifying units and fractions of them. We say: Teach them already in the primary schools! Peoples speaking the Latin or Germanic tongues have overcome all alleged difficulties, even where not the slightest similarity existed between the old and new system, their units, subdivisions or names of them. These peoples cannot be said to be more intelligent than the English-speaking ones; still the metric system is with them in daily popular use. Our technical and trade journals have thus far maintained a half-hearted attitude, the daily newspapers have kept silent on the subject, perhaps waiting for some semi-official inspiration from London and, most obediently, from Washington, and yet they pretend to educate the people and to do nothing that is not promoting the welfare of the people. We had to go to Canada to find a class journal that fearlessly advocates the speedy introduction of the metric system at home, in the interest of Canadian industries and commerce abroad. Taking upon itself its share in preparing the people for the inevitable change, The Canadian Journal of Fabrics, published by Messrs. Biggar, Samuel & Co., Toronto and Montreal, is not satisfied with publishing instructive articles, but gives educational material into the hands of the people in the shape of a chart 40 by 14 inches, which presents a view of the entire Metric System of Measures and Weights, illustrated by plain sketches, in a graphic manner, which cannot fail to make a lasting impression on the mind through the eye. It should be given a place in every counting room, office and school room, and will be forwarded on receipt of 10 cents to any address in the United States or Canada, by the publishers, Messrs. Biggar, Samuel & Co., Toronto or Montreal, Can."

REMOVING COLOR FROM SHODDY.

A simple yet safe process for removing the color from woolen rags and shoddy is greatly needed in the textile industry, more especially since the demand increased for light colored or undyed shoddy. Unfortunately the processes most easily carried out have injurious effect upon wool fiber. Recently, however, two German chemists have succeeded in finding an excellent chemical for the purpose in hydrosulphite, a product of reaction of zinc dust upon bisulphite of soda, which, when employed in the aqueous solution at boiling temperature destroys the color of the woolen rags after a short immersion. Of the hydrosulphite solution, only a comparatively small quantity is required, and with most of the rags, especially those of cloth, stockings, and woolen fabrics generally, a thorough decoloration is said to be obtained, so that the goods manufactured from them appear almost white, and as if manufactured from fresh wool. As with this process the solidity, touch and elasticity of the wool fiber are in no way injured, there is a great improvement in the treatment of rag material, furnishing regenerated wool of a good color, thus constituting a result of considerable importance.

The following is an example of the manipulation of the process: A thousand pounds of fully dyed rags (Bordeaux, scarlet, red, navy blue and green), called "Thibet," are boiled with from 150 to 200 gals. of water and 100 to 150 pounds of hydrosulphite solution, the rags being from time to time turned to enable the liquid to thoroughly penetrate them. After boiling for about half an hour the process is usually complete, the rags having become nearly white. They are then washed in a cold bath, dried, and are ready for manufacture.

The hydrosulphite solution is prepared by diluting two gallons of sodium bisulphite of 70° Tw., specific gravity, with 18 gallons of water at 30 to 40° C., and adding gradually four pounds of zinc dust, while the mixture is well stirred. After the reaction is complete, the whole is allowed to rest and the clear supernatant liquid is employed. Instead of sodium bisulphite, potassium or ammonium bisulphite may be used. Instead of separately prepared hydrosulphite solution, the bisulphite and zinc dust may be added directly to the bath, but this method is not to be recommended, as the material is soiled by the zinc dust. The rags may be boiled in either an open or closed vessel; in the latter case less hydrosulphite is required, but with the same result.

TORONTO INDUSTRIAL EXHIBITION.

The Toronto Industrial Exhibition of 1901 is generally pronounced to be an improvement on what it has been for several years. This is only what might have been anticipated, from the fact that Canada has had a most prosperous year, and that the crop, on which the whole prosperity of the country depends, is exceptionally good. Manufacturers feel encouraged to push business, and as the Exhibition affords a

ready means for them to bring their wares before the public, they have freely taken the opportunity of announcing themselves. Fears that the Pan-American would interfere with the Toronto Exhibition have been only partially realized; the attendance (which was disappointing the first week on account of the weather) was, during the second week, very large. If people went to the Buffalo Fair they did not forget to take in Toronto on the way.

In the lines in which this journal is specially interested there was nothing of peculiar novelty. A number of the leading Toronto dry goods houses, the departmental stores among the rest, made very attractive exhibits. The show of carpets and rugs was very creditable, showing that Canada need not now take a back seat in this line of goods to any country. Exhibits of great excellence were made by the Toronto Carpet Co., and the Dominion Carpet Co., of Sherbrooke, Que. The Toronto Neckwear Co. had numerous samples of their goods. Some samples of Japan taffeta for trimmings and millinery attracted considerable attention.

The upper gallery was as usual filled with samples of ladies handiwork, which spoke well for the industry and skill of their producers.

The Eastman Electric Cloth Cutting Machine Co., of Toronto, was on hand with its very excellent machine. D. H. Gillies & Co., of London, showed a cloth blocking and measuring machine which seems to possess several points of merit.

Many improvements to the buildings are necessary if the Industrial is to keep pace with the growth of the city and province, and there was little excuse for the neglect which resulted in the damage, and in some cases total destruction of valuable exhibits through the leaky roofs of buildings. A few dollars would have made these roofs rain-proof during the Exhibition, and the authorities had ample warning last year and this year, as to their condition.

NEW ANALINE COLORS.

Acid Chrome Black B & G.—These new products are very easily soluble, and are dyed in a strong acid bath with the addition of Glauber's salt and sulphuric acid. Dyed direct the colors can be employed in a similar manner to Naphthole Black 2B, but when afterwards treated with bichrome their value and properties are considerably enhanced, the shades then being very fast to alkalies and acids, as well as resisting the action of stoving and milling, and the after-chromed shades are also distinguished for their excellent fastness to light. With regard to their level dyeing property, they can be classified amongst the best products in this respect, and their good penetration is even superior to most of them. Both products can be recommended for the dyeing of slubbing in machines, as well as for the dyeing of loose wool and piece goods.

Brilliant Wool Blue B Extra and Wool Blue S R Extra.—Brilliant Wool Blue B extra is distinguished for its very clear and bright shade, whereas the S R extra brand offers a great advantage in its cheap price: both of these new products are possessed of the same good level dyeing properties, and are dyed in the same manner as the older N extra and R extra brands. Brilliant Wool Blue B extra is much faster to rubbing than colors of similar clearness of shade, such as Victoria Blue. The B extra brand can be employed in all branches of wool dyeing for the production of very clear sky blues, whereas the S R extra mark can be recommended for cheap dark navy blue shades, also for dyeing bright shades on dark shoddy. Both brands are well adapted for dyeing half-wool by the one bath process.

Katigen Black 2 B and Katigen Blue Black 4B.—The chief feature of these new brands is that they produce a much more bluish tone than the older brands, even when dyed direct. The 4B brand could almost be classified amongst the dark navy blues. Katigen Black 2B yields a bright bluish black shade, and can also be well recommended in combination with the older S W brand for the production of bluer black tones. Both qualities are possessed of all the same excellent properties as the older brands. With respect to their level dyeing properties, what has already been mentioned in former circulars on Katigen Black S W and T G equally applies to these two new colors. Both brands are well adapted for dyeing cotton piece-goods in the vat, and therefore need not necessarily be dyed on the jig. They are especially suited as substitutes for aniline oxidation black, and can be dyed in any machine. Even when dyed direct according to the one bath process they produce finer and faster shades than any existing black, the production of which is simplicity itself.

Pluto Black F Extra.—This new direct black is very fast to acids, and its fastness to light is much better than the B S extra brand, and will undoubtedly meet with a ready and favorable reception, the more so as its shade is a very fine one. Pluto Black F extra will prove very valuable where good fastness to light is required, as well as fastness to acids, and does not turn dull or flat in subsequent finishing with iron salts and logwood. It is further adapted for level dyeing in half-woolen fabrics, and is also suited for dyeing in the milling machine.

Samples, instruction circulars, and any of the above new shade cards mailed gratis to interested dyers by the Dominion Dyewood & Chemical Co., Toronto, Canada, sole agents in Canada for the Farbeniabriken vorm, Friedr. Bayer & Co., Elberfeld, Germany.

THE GIBSON COTTON MILLS.

Many of the readers of this journal have doubtless heard of Marysville, and some must have heard of the great cotton mill in successful operation there, but few possibly are acquainted with the circumstances which led to the establishment of such an important industry in what at first sight may seem to be an out of the way place, involving a considerable haul of raw material in and manufactured goods out.

Marysville is a town situated about three miles east of Fredericton, N.B., on the line of the Canada Eastern Railway, which gives it connection with the Intercolonial Railway at Windsor Junction, 105 miles distant to the east, and with the Canadian Pacific and steam navigation on the St. John River at Fredericton, three miles to the west. The river Nashwaak flows through the town, and affords a fine water-power, which drives the extensive saw mills of the Alex. Gibson Railway and Manufacturing Co. The existence of Marysville and its industries is due to Mr. Gibson, whose energy and enterprise have established and developed this important hive of industry.

The cotton mill buildings are of red brick, made on the spot, with cut granite trimmings, and are of the most approved type of slow burning standard mill construction. The main building is four stories and basement, 420 by 100 feet. At one end is a wing two stories and basement, 285 by 90 feet, and at the other end is the engine house, 42 by 56 feet, boiler house 93 by 47 feet, and blacksmith shop 56 by 20 feet. The dye-house is a two-story building in rear of and parallel to the mill, 229 by 72 feet.

The first floor of the mill is the weaving room, the second floor is occupied by the cards, the third is the mule spinning department, the fourth the warp spinning and dressing

and the top story of the dye-house is the cloth and finishing rooms. The capacity of the mill is 30,000 spindles. It employs 575 hands, and has been running for sixteen years. It manufactures colored goods—flannelettes, ginghams and shirtings—and is the largest producer of flannelettes in Canada. Its output is controlled by the Canadian Colored Cotton Mills Co. The machinery is partly English and partly American. The motive power is furnished by a pair of Corliss engines of 1,250 horse-power. Ten boilers supply the steam, and the exhaust is used for heating. The incandescent system of electric lighting is employed, the company running their own plant.

In the matter of fuel great economy is exercised, and in this respect one of the apparent disadvantages of the situation of the mill is overcome. The saw mills belonging to the company are run by water power, and the whole of the saw dust is therefore available for the cotton mill. A new system of furnaces has just been installed, a modified form of the Dutch oven furnace. The feed is automatic. A building has been erected, with storage bins into which the surplus saw-dust is elevated and kept for use at night and on Sundays. The coarser mill refuse is ground into chips and used with the saw-dust. There is sufficient saw-dust made in summer to run the mill, and thousands of cords of slabs and edgings are piled in the yard to be ground up and burned in the winter when the sawmills are not running. By the system employed it is anticipated that 20 per cent. in the amount of fuel and 60 per cent in labor will be saved. Formerly the saw-dust was thrown away, and coal was used, but economy of fuel was so important a consideration that experiments were entered upon which have resulted in the present system. Economy in this respect is of the utmost importance on account of the large amount of power required.

Alex. Gibson, the promoter of this enterprise, is a native of Charlotte county, N.B., and is a self-made man. He commenced work as a boy in the lumber camps in winter and in the sawmills in summer. Presently he took the job of sawing lath by the thousand, and then rented a mill and worked it on his own account. In course of time he found himself the owner of the largest lumbering business in New Brunswick, giving employment to a great number of men. Being a philanthropist as well as a business man it occurred to him that something should be done for the families of the men in his employ, many of whom spent a large portion of the time in the woods. He was led by this idea into the establishment of the cotton mill in which the women and young people might find employment. He owns the town, and is the proprietor under freehold or lease of about 300,000 acres of timber and other lands in New Brunswick. No one can purchase a lot in the town, as Mr. Gibson prefers to keep entire control of the property. He has erected a great number of houses for his work people, which he rents to them at a low figure. A total abstainer himself he allows no liquor to be sold. He has built a handsome Methodist church, which he almost entirely supports. There are also three Baptist churches and one Church of England in the town.

Mr. Gibson was almost insensibly drawn into railway building and constructed the Canada Eastern Railway across New Brunswick from Fredericton to Chatham Junction, which opens up a large section of country, which is filling up with settlers, who find a market for all they produce at Marysville.

Though 82 years of age Mr. Gibson is still hale and hearty, and takes an active part in superintending operations. To provide against contingencies the business has been put in the form of a joint stock company, styled the Alexander Gibson Railway and Manufacturing Co., with a capital of $9,000,000. The business has always paid well. The cotton mill is under the control of a very capable superintendent in the person of J. B. Cudlip, a New Brunswicker, who has had considerable experience, and is thoroughly well informed as to the business in all its details. Mr. Gibson's son, who is associated with him in the business, was elected to the Dominion House of Commons for York county at the last general election. This industry shows what the energy and enterprise of one man can do when applied in the right direction. It is an object lesson for every young Canadian.

DIFFICULTIES DURING FINISHING.

As a rule, the difficulties originating outside of the finishing room can best be corrected in the department where they arise, though some demand special care and treatment in the finishing room. At all events, the finisher is expected to bring the goods out as nearly perfect as possible, and to do this entails upon him the double duty of having his eyes open to faults in both his own and other departments, which have an influence upon his work. Difficulties in the finishing room, says the "Textile World," often come when least expected, and sometimes disappear before their cause has been determined.

One of the troubles which almost every finisher has at times to deal with is that of cockled cloth; while it is made distinctly manifest in the finishing department, the cause may or may not be due to any fault in the finisher's method. In fact, it is more frequently traceable to some other department, and there is hardly a department in the mill that is entirely free from a possibility of causing the trouble. There are three conditions that may cause cockles to originate in the finishing room. If the fulling soap is not sufficiently strong to thoroughly saponify the grease in the goods, the fulling must be imperfect. In places where the grease has been overcome, and its effect destroyed, the fulling will proceed, while it will be retarded where the saponification has not taken place, or is imperfect. This, of course, results in irregular fulling, and the cause can only be removed by adding to the fulling soap a sufficient amount of alkali to render its action perfect and complete. Another cause of cockles may be the lack of sufficient soap. If there are parts of the cloth that are not sufficiently wet, they will fail to full, while the parts that are wet are favorably affected, thus producing an irregularity. A third cause, which is somewhat similar to the second, is the careless application of the soap, by which, even though the quantity be sufficient, it fails to go on the cloth evenly, and the parts that are wet first get the start of the places that become wet later, thus producing an irregular width which the after fulling may not fully overcome. The finisher should therefore see to it that his soap is equal to the requirements, and that the soaping is carefully and intelligently done.

It would be impossible to designate all the things in the other departments that would cause cockles. But it is plainly evident that anything that could in any way produce uneven fulling might be responsible for them. The following are a few of them: In the picker-room any irregular mixing of long and short stock, or wool and cotton, by which some portions of the filling yarn would have more of the good stock than other portions; any irregularity in either size or twist of the yarn; and we may here say that this suggests the importance upon some kinds of work of keeping top and bottom spools from the cards separate, and using the yarn separately. Careless steaming of the weft, by which some parts may become saturated with water, causing irregular weaving, will sometimes give trouble. A variation in the weaving by which the

cloth may vary in weight, having heavy and light places; this may occur from the carelessness of the weaver or from an irregularity in the take-up of the cloth, or the friction or let-off at the warp beam, or sometimes a beam that is crooked or with a sprung shaft will cause an irregularity in the cloth. All of these possible causes make it nearly impossible for the finisher to at once locate the cause or to apply the remedy. But he should be able to determine if the trouble is in his department, and act accordingly.

Cockles caused in the finishing-room are usually irregular, and the wrinkles caused by them more pronounced in the middle than on the sides of the cloth; while if caused in the other departments, the wide and narrow places will show equally all across the cloth, the changes being abrupt from wide to narrow, and often in spaces indicating one or more bobbins of weft, or at uniform intervals, corresponding with the revolutions of the warp beams. In the matter of the oil used upon the material in carding, the manufacturer cannot be too careful to secure a good oil and avoid frequent changes. The manufacturer is sometimes too ready to try experiments, and by getting into the works two or three kinds of wool oil, each of which requires a different strength of soap, gives the finisher the impossible task of producing uniform results with a soap only adapted for one of the oils in question. By a proper adaptation of the soap, and a careful application of the same, together with a prompt report when it is discovered that cockles are caused by faults in the other departments, the finisher will have done his duty regarding them.

Another trouble which the finisher has sometimes to contend with is mill wrinkles, or wrinkles made in the fulling mills, which become felted, so that they cause an imperfection in the finished fabric. As a rule, these wrinkles occur near the ends of the cloth, usually being most pronounced on the end that enters the mill first. Careless sewing of the ends, by which the seam is irregular, or the stitches too long, will produce wrinkles; and often their extent into the cloth is in proportion to the irregularity or length of the stitches. Fine and uniform sewing, or, what is better, the use of a mill sewing machine, will remove this cause.

The weaving of headings in the ends of the cloth, of yarn that fulls faster than the body of the piece, will cause the cloth to wrinkle, on the same principle that narrow places in cockled goods will produce them; and where the wrinkles remain in the cloth during the fulling, they produce felted streaks. It is best to have no heading woven in the cloth, unless it be of yarn of less fulling quality than the regular weft. Should the mill wrinkles occur in the body of the piece, without reference to the ends, the only remedy is a frequent overhauling or opening of the cloth to change the folds in it before they become set or felted. If the cloth is not intelligently designed or "laid out" in the loom, and the warp threads are crowded or out of proportion to the weft, mill wrinkles will result, in spite of the finisher's best efforts, especially upon goods requiring several hours' fulling. Anything that tends to open the cloth on its passage from the rolls to their entrance again, or otherwise to change the folds, will obviate the trouble, and in this matter there is an opportunity for an improvement in the modern fulling mill.

Rolling selvages are usually due to something not under the control of the finisher. Frequent opening and shaking of them out, or sewing the edges of the cloth together, with the side toward which they roll outward, so that in their tendency to roll they are holding each other from it, are the only remedies for the finisher. Further corrections must be made in the yarn or weaving. Cloth with a predominance of weft on one side will tend to roll toward that side, and the trouble is intensified by the open or loose character of the weave. If the selvages are made in the loom tighter, or of stock that will shrink faster, and in consequence become tighter than the cloth, they will at once begin to roll, and the only remedy is a change either in the yarn or the weave of the selvage, to make it slacker or less inclined to shrink.

Sometimes, when the selvages are all right, the leaving out of a broken warp thread in them, or a wrong draw, will expose the weft, causing a shrinkage at that point that will turn the edge of the cloth and produce the trouble. It is too often the case that the weaver fails to understand the importance of perfect selvages, and they go to the finishing-room in all kinds of conditions, giving the finisher trouble in fulling, gigging, shearing, and pressing, often resulting in their destruction, despite his best efforts to save them. The result of rolling selvages is a more compact and heavier felt on the sides of the cloth, owing to the increased warmth at that point in fulling; so that it is quite impossible to produce a uniform finish, even if the finisher succeeds in opening out the cloth in the last processes of his work.

Dirty goods mean a serious difficulty. One important thing which is too often overlooked is the fact that the fulling is, or should be, considered a part of the scouring process, and serves as such when it is correctly done. As a rule, where goods are not properly cleansed, the fault is as likely to be in the fulling as in the scouring. If the saponification is imperfect or incomplete in fulling, the heat produced in the process tends to set the grease, making it harder to remove in scouring. If the saponification is perfect it converts all the grease into soap, and though in a dirty state, if of sufficient body, it holds all the foreign matter until the scouring follows to complete the work. There are many difficulties in the dry finishing that are the direct result of a failure to properly clean the goods, hence the battle is largely won by thorough work in the wet department. Crooked plaids or checks are sometimes made worse by uneven or very slack selvages; but good results can only be assured by care to keep them as nearly straight as possible in drying and on the press.

LABOUR GAZETTE ON THE SWEAT SHOPS OF HULL.

In the May number of the Labour Gazette, Rodolphe Laferriere, correspondent of the Labour Gazette for Hull and district, drew attention in his monthly report to the unsatisfactory conditions obtaining among the workers in the ready-made clothing trade in Hull. Mr. Laferriere then reported that there were at least 500 women and girls who derived their living in the city through sewing, and that this number did not include the many children who in one way or another assisted their parents or sisters in the preparation or delivery of the ready-made garments. He furthermore stated that a large quantity of clothing was manufactured for firms in Ottawa, the work of manufacture being carried on in the homes of those who took in the work. Continuing, he quoted the following prices as those paid for the work: "Men's sack coats are made up at from 20 to 25 cents a coat; sack coats for boys at 18 to 20 cents, sometimes 15. To make the former requires often much more than a day's work, and to make up the latter from 12 to 13 hours. men's heavy pea-jackets, with quilted lining being 35 to 40 cents each. This work requires from 20 to 23 hours. Vests are paid for at the rate of 60 cents per dozen, which is the same price as is paid for the making-up of boys' pants. Men's pants, of common sort, are made up at the rate of 80 cents per dozen; ordinary tweed pants at $1 per dozen, and serge pants at $1.50 per

dozen. Girls working from 16 to 17 hours daily earn on an average $2.35 a week, when times are good."

The Gazette correspondent further drew attention to the complaint which some of the women made, that certain stores would not give out any work to girls who did not buy their sewing machines from them, and receive payment for all of their work in goods. When paid in cash, a discount amounting to from 15 to 20 per cent. was sometimes charged.

In his report, published in the June number of the Gazette, Mr. Laferriere again referred to the conditions in the ready-made clothing trade, stating that the chief provincial inspector from Montreal had visited the city during the month, with a view to making certain recommendations which might lead to a betterment of the conditions in the industry, and that the subject had also been discussed by the Central Trade and Labor Council in Ottawa, which passed several resolutions in reference to it.

Since the appearance of these articles, the existence of the sweating system in Hull has attracted considerable attention. During the month of July, Mr. Guyon, inspector of industrial establishments for the province of Quebec; Mr. Brown, factory inspector for the province of Ontario, and Miss Carlyle, female factory inspector for Ontario, visited Hull and Ottawa, with a view of ascertaining the actual conditions existing in the garment-making industry in the district.

According to the statement of facts, as set forth in interviews with Mr. Guyon, the conditions which he found in Hull were substantially as given by the correspondent of the Labour Gazette, for Hull, these interviews going to show that so far as the sanitary conditions were concerned, under which the garment makers in Hull were working, there was no reason for complaint. The chief grievance lay in the matter of the prices paid for work, which were as follows: Pants, from 60 to 75 cents a dozen pair; vests, 80 cents a dozen; coats, 18 to 25 cents each. A woman who with two assistants could turn out 12 coats in a week of six days of nine to ten hours, would receive from $2.16 to $3. Payment was made in "bons," which could not be exchanged elsewhere than in the stores which had issued them. These "bons" were not received at their face value, but at a discount of 25 per cent. Sewing machines sold to garment makers by the manufacturers were paid for in these "bons" at the rate of $2.50 in "bons" for $2 in cash. The inspector remarked that most of the women who accepted the work were wives of labourers or mill hands.

In interviews with two Ontario factory inspectors, it is stated that 90 per cent. of the clothing sold in Ottawa was manufactured in Hull. One of the inspectors in an interview stated that about 150 or 175 of the Hull seamstresses were using sewing machines supplied by manufacturers for whom they worked, and by whom they were charged $55 for the machines, upon which they had to pay at the rate of $2 per month. If "bons" were offered in payment, $2.50 in "bons" was required instead of $2 in cash. In one case in Hull, a widow and three daughters were engaged in making coats at 25 cents each. The inspector was further informed that it took one person a week, working from 7 o'clock, a.m., until 9 p.m., to finish a dozen coats. One member of the family had to devote her time to the house work, and the other three were by their united efforts able to make $3 in wages per week.

The Ontario inspectors at once found a difficulty in dealing with the case, where the goods were made up outside of the province, and an arrangement was made by which the inspectors for the two provinces should co-operate in the case. This arrangement was carried out, and in his report for July, the correspondent of the Labour Gazette, for Hull, says:

"A feature of the past month was the decided stand taken by the factory inspectors of Ontario and Quebec, jointly, in the matter of ready-made clothing. The statement made in the June number of the Gazette, regarding the sweating system in Hull, was quite borne out by the investigation made by Mr Brown, Miss Carlyle, and Mr. Guyon. It was found that seamstresses were paid one cent per hour in Hull. The sanitary inspection of homes proved most satisfactory, and by the joint action of the inspectors for Ontario and Quebec, the Ontario label will be enforced upon the ready-made clothing firms of Ottawa."

CLOSE-FINISHED CHEVIOTS.

As close-finish cheviots receive considerable attention just now in the market, a few words on the subject may not be out of place. We have now two kinds of cheviot—the rough finished, or, as it may properly be called, the original cheviot, and the close finished. On the latter the threads are supposed to show up plainly, almost like a cassimere, being in this respect the opposite of the rough-finished fabric, still going under the name of cheviot. The burling of these goods need not be so thorough and elaborate as on cassimeres; still they should receive a fair going over. The mending will naturally depend largely upon the style. Some styles show imperfections rather readily, especially if bright colors are used for effect. Of course, these must be looked after, that the pattern may show up intact in the finished product. The goods are run about three hours in the mill, and former experience leads us to believe that four ounces of hard soap, with about two and a half ounces of pure alkali ought to be amply sufficient. But if, when the goods reach the washer, the lather does not seem to start as well as it ought, another ounce of soap may be added. If the lather should not be as rich as one would like to have it, we should keep on adding one-quarter ounce of hard soap to the gallon on every batch we made until we got one that would suit us to a nicety, and then keep to that. If, on the other hand, we should start too heavy, and, upon seeing the goods run in the washer, come to the conclusion that there is considerable soap going to waste, we should reduce the amount of hard soap one-quarter ounce to the gallon at every batch until we got what we wanted. If the goods do not scour readily, there must be something wrong, and it is necessary to get the goods perfectly clean or they will finish harsh. Often the dull, heavy finish so frequently seen in close-cropped cheviots is due to the oils which are employed for lubricating the fiber previous to carding. There is a variety of oil got from recovered soap grease called wool oil, but it is rather turbid in appearance. The best samples are a clear, brownish-red oily liquid, with a peculiar odor, and containing hydrocarbon and unsaponifiable matters. Under the name of oleine, there is a vast quantity in use among dyers and finishers of a castor-oil preparation. The test for this is that it is easily dissolved in water. Oleine is made of varying proportions of fatty acids, the strongest from 70 to 80 per cent., and as low as 30 per cent. So far as merely oiling wool for cheviots is concerned, olive oil, perhaps, works the best; but in this process any oil used must be thoroughly gotten out of the goods before the pieces leave the washer.

When the goods are brought into the fulling department, the first thing done is to sew the piece number, range and pattern on the heading end of each cut. Sometimes the figures are not only unnecessarily large, but are placed four to six inches away from the end of the piece. On every such piece there is a loss of two to four inches. After the number, etc., are put on the narrow margin of the heading of the pieces,

they are ready to full. We will full these goods to the desired width and let them take up in length what they will, if any. Take them and properly wash them, following in this respect the same method as in the before-mentioned process, with the exception of speck-dyeing them if necessary. If the goods are flocked it is impossible that all the flocks, which are used upon the goods, should enter and felt into the body of the cloth, and what remains over is the residue, which is washed and dried and prepared for a second application. The seam where the two ends of each piece are sewed together should be made in small stitches. If the cloth is light in weight, the necessity for this is all the more apparent. Where long stitches, say an inch, are made, the irregularities will sometimes be noticeable for a yard or so of streaks into each end. After the goods are fulled—both time and care being given to the operation—a second scouring is undergone. This washing is accomplished without the aid of any more soap, since the soap which remains after the fulling is quite sufficient for the purposes. Warm water, from 100 degrees to 110 degrees F., will raise a good lather and clean the fabric. A careful rinsing, carried out on the usual common-sense principles, will close this part of the operation and prepare our goods for the extractor and the gig. The goods should be given a fair breaking at the gigs. When the gigging process is over, the nap may be evened up and smoothed on the copper before the goods are steamed. The steaming, which is done either on the steam gig or steamer, is a process which does not need to be rehearsed. Three or four applications of steam and an alternation of wet giggings will give the desired lustre and feel. After extracting and dyeing, brushing with a little steam and shearing will follow.

In shearing, success depends much upon the goods being in proper condition when they are put into the machine. For the most successful treatment of the nap, as it is acted upon by the sharp blades of the revolver, and the edge of the ledger blade, no condition is so well suited as that of a perfectly dry nap. As the dry fiber is more easily cut at the gig, so it is reasonable to suppose it is more easily cut at the shear. Thus, from the mere fact that the operation of shearing is more easily performed when the nap is dry, we may safely conclude that a perfectly dry fabric is indispensable.

The great point is to keep everything about the shear in perfect order. If shearing-machine men would take up this system of looking machines over oftener, there would be very much less trouble about breakdowns, says The Tradesman, and this periodical tearing to pieces would soon become a lost art that very few would take the trouble to rediscover. It is much better and easier to grind a knife often, taking a light grind, than to file and stub a knife in the machine, and then be obliged to grind heavily, at expense of time, waste of knife and emery stone, as well as the risk of spoiling the temper of the knife, and also throwing it out of balance. A keen edge, straight bevel, makes a knife cut freely; it is easy on journals and belting. We are now ready for the pressing, and set our press so as to give them a medium pressing, not too hard. The goods should be run face to the cylinder, for we do not want any lustre, and even what little we get by pressing the face to the cylinder should be carefully removed by steam afterwards.—Textile Manufacturer.

DYEING NOILS AND LOOSE WOOL.

Noils are frequently mixed with loose, uncarded wool, in order to simplify and facilitate the dyeing of such mixtures, and it is often a question of dyeing comparatively small lots. By a shortened process, time and fuel are saved, of course, but then it is a speculation with the dyer whether or not the process will succeed. The better way is to dye the noils and the raw washed wool separately. If dyed together, the noils are almost always more felted than the wool, and the color of noils will almost without exception appear different from that of the wool. This is a serious defect if the material is to be used for uni-colored goods. Furthermore, the disadvantage arises, in the case of mixtures, that the noils, if strongly felted, mix badly in the carding process. To avoid the disagreeable consequences of this mixed dyeing, it is better to dye each material by itself. In the case of loose wool, it is still possible to recognize the nature and source of the material, which cannot be accurately done in the case of noils. It frequently occurs that different kinds of wool are combed together, and thus it happens at times that a quite strong fiber will be combed in with defective goods in order to make the latter more fit for the manufacturing process. It hardly comes into consideration whether the inferior material be long or short, fine or coarse; the main question is to secure uniformity in the felting tendency. If this be the case, it is easy work for the dyer. He has only to be careful, when dealing with well-felting noils, that in mordanting the bath be kept near the boiling point without actually reaching it. If in this way the mordanting has lasted one and one-half hours, and the noils still remain loose and have the appearance of not being felted, a half-hour's boiling will do no harm. Nevertheless, strong boiling is to be avoided. In the case of noils that have but a slight tendency to felt, one and one-half hour's boiling is permissible; but here, too, excessive boiling is to be guarded against, otherwise the weak felting tendency of the material will be still further weakened. As a rule, mohair noils felt most strongly in dyeing, so that in working with this material boiling must almost invariably be avoided and merely a seething temperature be maintained. In the dyeing out of the material the same cautious treatment must be observed.

If noils and wool are to be dyed according to one and the same sample, the best plan is to match each separately, and not to mix the noils and wool until dyed. In that way it is possible to give each material its proper attention. Precaution is likewise necessary in the case of uncarded wool, on account of its non-uniformity. The various colonial wools possess such an endless variety of characteristics that dyers are almost compelled to treat each wool according to its origin. For instance, one kind of wool comes from sheep that rest at night in the sand on the open plain. Such wool is usually not so yellowed as the wool of sheep kept in stalls. Then comes the feeding of the sheep, the washing of the wool, the health of the sheep, and whether the wool be live or dead. All this asserts itself very frequently during dyeing, in the most unexpected ways and in difficulties that involve all kinds of inexplicable phenomena. In spite of all pains and effort, the result can never be guaranteed; it can only be approximated, even if we work according to the customary and well-compiled recipes.

If noils be matched in dyeing and then an effort made to bring the same shade upon loose, uncarded wool, the working of the mixture for one-colored goods will present difficulties only if great non-uniformity exist in the felting tendency of the two materials. If one material felts strongly and the other not at all, a good smooth felt cannot be obtained. The so-called felt, after completion, will be stubby, or, as we may say, not fully closed. Loose and dense places will show as if the object had been to produce rough, coarse goods. Whether noils and uncarded wool be dyed together or dyed separately, there is one point to be kept in view, says the "Deutsche Faerber Zeitung;" both materials must have the greatest possible uniformity as to felting, and they should be alike in other respects as well, such as fineness, etc., in order to assure proper preparation for the manufacturing process.

Foreign Textile Centres

MANCHESTER.—From The Draper's Record we learn that the turnover in the home trade is still of a restricted character. The efforts of travelers to give an impetus to business do not meet with much success. In the heavy branches a firmer tone was succeeded by a drop, and this irregularity has greatly upset the market. The intricacies of the cotton market have been compared to the fluctuations in betting at Tattersall's. An advance is welcomed in the linen districts. In view of the wish expressed by Her Majesty Queen Alexandria that domestic goods should be worn at the coronation, cotton manufacturers, as well as those interested in silk and other fabrics, are preparing designs specially appropriate for the occasion. Silk is more likely to benefit by this event, especially in the embroidery and trimming departments, than other fabrics. The mere demand, however, for the coronation ceremony will not in itself furnish, relatively speaking, much employment for machinery. It is to the fashionable example likely to be set, and the amount of attention attracted by the colors, designs and weaves of the designs shown that the British silk trade must principally look for benefit from Her Majesty's desire. As to the condition of the cotton crop it is, as to the United States, not particularly encouraging, according to government report. While better than on the same date in 1899 and 1900 it is worse than on the 25th of August, and a little below the average of ten years. The less favorable conditions are found in Texas, Arkansas and Oklahoma; the more favorable in Mississippi, Georgia, Alabama, the Carolinas, Missouri, Lousiana, Tennessee, Virginia, Florida and the Indian Territory. In Egyptian cotton the situation is distinctly in favor of buyers. Many of them have taken advantage of the weakness and quite a little business has been put through at what seem to be low figures. The enquiry is chiefly for early deliveries. There is quite a little enquiry for September shipments, but this is of necessity old crop cotton. A peculiar feature of the cotton-piece goods trade is that the shipments from Liverpool far exceed those sent from Manchester by ocean carrying vessels. During the last week of August Liverpool exported 27,755,000 yards of cotton goods to Calcutta alone.

DUNDEE.—The jute market is a shade stronger. Advices from India indicate that the crop is large and the quality excellent. Spinners are buying with caution in the expectation that in October jute will be easier bought. This may or may not be the case, but such is the feeling at present. Jute yarns are quiet. For cops 1s. 5d. is paid for 8-lb common quality, and 1s. 6½d. to 1s. 7d. for 8-lb warps. Heavy yarns show a downward tendency. In hessians only a moderate demand exists, and orders are keenly competed for. Only white wide goods continue to command full prices. The miscellaneous trade in odds and ends amounts to a large proportion of the Dundee jute business. This is of growing importance. The Textile Mercury remarks that it is well that it is so, as Dundee does not in this suffer from the severe competition which forces down ordinary goods. The government has been purchasing largely in flax and tow goods. Unfortunately this rather injures than helps the general trade. The ordinary buyers refuse to increase their stocks at the rates current, and buy only in very small lots "from hand to mouth." The fancy jute trade is very quiet, and prices are cut very fine. Reports of the new flax crop are conflicting. The crop promises to be large, and while the low prices of three years ago cannot be hoped for, the price will probably give way when the new crop arrives.

KIDDERMINSTER.—The carpet trade generally is quiet. One or two mills have resorted to short time, which, it is understood, will be continued for several weeks. This enables manufacturers to press forward their arrangements for next season. Pattern-trying is pretty general, and consumers are likely to have a fine range of designs to select from.

BRADFORD.—There is not the increase in business at this centre after the holiday season which was in many quarters anticipated. There is, however, a more hopeful tone in all departments of the wool trade. Merinos are keeping their price well, but the fall of two years ago is causing dealers to proceed with the utmost caution. The situation may, however, be described as distinctly strong, as all the authorities agree that there is a serious decrease in the production of pure merino wool, and the consumption has been steadily increasing for some time past, and stocks, both of raw merino and the wool in the earlier stages of its manufacture, are not large. In considering the probabilities of the early future it should not be forgotten that when fashion has set in in favor of fine wool goods, there is no other class of wool which can adequately replace pure merino, as from no other wool can the requisite fineness and softness be obtained. In men's wear finer and softer goods appear to be more wanted, and the wearing of numerous and voluminous underskirts by ladies makes it absolutely necessary that the dress material proper must be composed of a light fine fabric, which can only be produced from the finest wools. The demand for combed tops made from the cheaper kinds of crossbred colonial wools has been improving, and this improvement has now enabled holders of combed to advance their prices by some 5 per cent. There is no restriction of the output of these cheap colonial wools, and the production of them in both Australia and South America has attained very large proportions. Mainly on account of this great supply, the price of this raw material has fallen to an unprecedentedly low figure, until to-day it is less than that of average American cotton. Of course, the waste in the subsequent process of manufacture, and the cost of manipulation into yarns of this crossbred wool, is proportionately much greater than in the case of cotton, but, on the other hand, wool is much more durable, and the worsted rags are ground up as shoddy several times after being discarded by the first wearer. This extreme cheapness of the coarser crossbred colonial wools is doing much to popularize the wonderfully cheap all-wool materials of the serge character which are now being produced so largely both in Britain and on the continent, and new styles made from these wools are also being introduced. Spinners report that there has recently been an improved demand for yarns made from colonial crossbred wools, both on home and continental account, and that there is a more hopeful tone throughout this department of the market. Although most classes of English wools continue in quiet demand, there is still a good enquiry for the very best English lustre wools, and the prices of these have advanced fully a halfpenny per pound.

LEEDS.—The woolen trade shows little change, but most of the factories are at work again, though comparatively few have sufficient to keep them going full time. Winter repeats are coming in, but there is as yet no sign of any very active trade. Some prospect of improvement, however, arises from the fact that stocks of certain fabrics are getting very low and consumption must sooner or later stimulate production. Meanwhile there is a fair demand for light weight goods for the Australian market, fancy tweeds and worsteds being mostly in request. The home trade in winter goods shows no sign of expansion. The retailers of ready-made clothing have of late had nothing to complain of, and autumn goods appear to be

in gratifying demand. With the exception of the Australian and Canadian trade exporters find little to keep them going, and the shipping prospect is not likely to improve until a settlement is arrived at in South Africa.

LEICESTER.—The yarn market is fairly active, and stocks are kept low by the larger deliveries, but competition is still excessively keen. There is a large turnover in worsted yarns at low quotations. Cashmere yarns are only in moderate request, and the consumption increases very slowly. Lambs' wool and fancy yarns have a good trade, the contracts for North European countries being well up to the average. The hosiery trade is rather variable, but in volume is up to the average for this season of the year.

DEWSBURY.—The Dewsbury correspondent of The Textile Manufacturers Journal writes: No improvement in the shipping trade has come about. Prices are about as low as ever they were and still the business does not come. Acute as it is, it is difficult even to surmise the cause of this depression, but probably the overbuying of two years ago has had a great deal to do with it. Another factor that may be mentioned in this connection is the increasing foreign competition, and now that there are a considerable number of mills in Germany badly in need of orders it will become worse unless a change comes about. It is felt on all hands, however, that when the sorry business in South Africa is settled an improvement will take place. Melton and serges are not wanted for abroad, and only a few medium tweeds and viennas are being taken for the far East and Canada, keeping one or two local mills running very well. Of union goods for women's wear very little is now being exported, the call seemingly having almost fallen away. In the lower grades of Presidents a fair call is experienced. The spring trade for Canada, to the great detriment of Canadian mills, is said to be opening fairly well, and in view of the good time that country is experiencing it should make an impression here in the near future. The few local factories that have hit on the ladies' mantle trade are doing very well and are producing all possible, getting it through for the end of next month when deliveries will begin to fall away. Two or three cloths have taken the fancy; two of them the same as last year's productions which were referred to in these letters. Another is a fine quality, made out of the best tailor's cuttings with all the worsteds in, to give a good length and having both warp and weft of the same yarn, fulled up and dyed into black chiefly. This has a most excellent call. Yet another is a shade coarser, being really a good medium. It is made out of a cheviot, serge and fine mixed, giving a rather rougher surface when finished. Both these lines are made with a cotton warp also and are heavily fulled. Local shoddy mills are very badly off for orders. In many British mills the very low price of medium and coarse grade wools has had a terrible effect on rag stocks. Buyers are using wools in the place of shoddies and at the present time, strange to say, the most heavily tariffed country in Europe, Russia, is buying most of the exported rags and shoddies. In the face of a forty per cent. duty on the former and nearly sixty-five per cent. on the latter this country is a good and very steady customer for our best grades. The finest shoddies made, also thibets and merinos, blues, blacks, brown, reds, in the rag, shoddy or carded state, carbonized and dyed into various shades, chiefly for the flannel and shawl trade, are asked for in that market. But little of the coarser lines, however, are wanted. Germany and Austria are taking but little, and France and Italy even less. The anticipated change in the German tariff will not to any great extent affect our local industries, the only change effected, we believe, being that carded shoddy will pay a little more, about 2 per cent. or so. Canada is taking a few extracted merinos for the beaver trade, and whites of a very good color for the knitting and hosiery mills. The trade in rags to this country has these last few years, and especially the last six months, undergone a most remarkable change. Where 100 bales were shipped there, about 10 now goes, and from there hundreds are coming over here, a lop freight to certain ports enabling shippers to place here stock, chiefly in new clips, at prices that are favorable to our buyers. Large lots are coming from Ontario; the best merchant tailor's, at about 6½ cents, a medium mixed tailor's and wholesale clips, at 6 cents, and a lower grade at 4 cents, meet with a ready sale. Satinets also in mixed and gray and blue and black mixed are taken freely. An attempt has been made to introduce mixed soft woolens here, but the prices are too high for importers to make any profit from them. A few lines in graded stock, skirted cloth and clips also are asked for and placed freely. In fact to-day the best selling stocks in this market are clips; more mills than ever appear to be asking for them. Blacks, grays and cloth in gray and lights are taken freely and large lots, both in the mixed and graded state, are being imported from Paris and Berlin and various other parts of the continent.

NOTTINGHAM.—There has been more business doing in the lace market, but the actual demand for yarns is below the average. The higher counts are in less request, and the heavier yarns for curtains are moving less freely, though prices are firmer. Hosiery yarns are slightly dearer, and there is a better enquiry. Silks are neglected. Bobbin nets are only in moderate request, and the market is in favor of buyers. Valenciennes and Torchon laces and insertions and all-over fancy nets are in request in the millinery lace departments. The Queen's request, respecting fabrics to be worn at the coronation, is expected to give a great impetus to the lace trade. In the meantime, the death of Empress Frederick has had a depressing effect on the sale of lace. The plain branches of the trade are not exhibiting much tendency to increase. Bobbin nets, Mechlin tulles, and mosquito nets are easier to buy, though there is no decline in quotations. The demand is less active, and production curtailed. Zephyr, Brussels, and Point d'Esprit nets are in moderate request for millinery purposes. The silk lace department, which was formerly one of the leading branches of the trade, shows a great falling off from its former prosperity, with no prospect of an early revival. Cotton stockings and socks are in limited request. There is a moderate enquiry for cashmere hose, but prices are unsteady. There is a fair turnover of business in merino and cashmere half hose. In larger underwear there is steady enquiry for cashmere and merino vests, and for natural wool combinations. Prices are somewhat irregular.

BELFAST.—The tone of the linen market is distinctly more hopeful. Enquiries and orders come in increasing number, stocks in hand are low, and rates are firm, with a rising tendency. The volume of trade in the yarn market during the week has been rather disappointing. Buyers are only taking what is wanted for immediate needs, and the collapse of several firms in the yarn trade has had a prejudicial effect upon prices. Most numbers of tow yarns are scarce, and prices are very firm, but though endeavors were made to dispose of some line wefts under regular rates buyers were not to be tempted. The new flax crop is beginning to come in, and the yield and quality are favorably spoken of. The demand for brown cloth is steadily growing, and prices are rising in sympathy. Some apprehension is expressed lest manufacturers by advancing rates too rapidly should get a setback to the expanding trade. There is a fair request for power-loom linens for bleaching. Cloth for dyeing and boi-

lands is selling more freely, and the demand for unions continues to improve. Damasks and house-keeping goods are in fairly brisk request, and dress goods continue in satisfactory demand. The handkerchief branch is slowly improving. Hand-loom linens for bleaching keep dull. Bleached and finished linens are selling more freely. For damasks and household linens, and also for handkerchies there is a steadily increasing sale. Prices all round tend upwards. A good trade with the United States and Cuba is looked for. The trade with Canada is increasing. The Australian trade shows a falling off. South American markets are quiet.

South of Scotland.—The Glasgow Exhibition has not done the dry goods shops of the city much good, though they expect to reap a benefit by and by. Persistent advertising fails to bring buyers in the numbers anticipated, but better sales are expected as the season progresses. An excellent tone prevails in the Glasgow cotton yarn market, and prices are tending upward. Orders are still scarce, and, as a result, a number of the tweed looms in the South of Scotland are idle. Only two or three manufacturers are in the happy position of being able to keep all their machinery in operation. Spinners are doing a fairly good trade. Wool continues firm in price. The lower grades of cross and half-breeds are hardening. There is no demand for cheviots. There has been practically no change in the Kirkcaldy linen trade for several weeks. There is no booking ahead, and buyers seem to be supplying their immediate requirements only. A fair amount of business is passing at the floorcloth and linoleum factories.

THE GERMAN CHEMICAL INDUSTRY.

Dr. Frederic Rose, British Consul at Stuttgart, Wurtemberg, has made an exhaustive report on the growth and condition of the German chemical industries, from which some facts, relating to those substances which enter into the manufacture of textiles, will be of interest.

Potash.—The manufacture of potash from potassium chloride dates from 1861, and has increased since 1872, when the quantity produced was 1,250 tons, to 23,000 tons in 1891, valued at £400,000, the product of 12 works. The home product has to a large degree displaced the foreign, the average excess of import over export from 1856 to 1870 (5,262 tons), having given way to an average excess of export over import from 1888 to 1890 of 9,584 tons. Previous to 1860 Russia was the principal source of supply, but as soon as its manufacture was entered upon at home, the quantity declined, and the import sank from 11,011 tons in 1864 to 305 tons in 1890. In 1887 Russia imported 20 tons from Germany. The import from the United States likewise sank from 2,611 tons in 1865 to 388 tons in 1873, and from Canada from 7,500 tons in 1850 to 5,000 tons in 1872. Under the new electrolytic process, chlorine and caustic potash are now procured directly from potassium chloride.

Soda.—The following figures give the increase in the production of soda: In 1882 the production was 100,500 tons, of which 44,000 tons were ammonia soda. In 1890 the production was 188,000 tons, valued at £950,000. Since 1884, the export of soda products began to exceed the import, so that for 1890 the excess of export over import amounted to 28,465 tons, valued at £167,400. In 1890, the production was 250,000 tons, of which only 30,000 tons were Leblanc soda.

Sulphuric Acid.—A much greater quantity of sulphuric acid is produced than is required for home consumption. The excess of export over import for 1898 is shown by the following figures:

Description	Quantity. Tons.	Value. £.
Soda crystals	1,745	4,800
Soda ash	36,675	165,500
Bicarbonate of soda	748	11,200
Caustic soda	4,494	41,750
Total (calculated for 100 percentage soda)	40,000	223,250

The quantity of iron pyrites mined in Germany for the production of acid increased from 23,311 tons in 1862 to 130,849 tons in 1898. Of the last amount, 136,849 tons (about three-fifths), were converted into sulphurous acid for the production of sulphite cellulose.

But while a large part of the iron pyrites required is mined at home, and much is exported, the import is still large. The excess of import over export in 1898 amounted to 357,598 tons. Of this amount 290,052 tons came from Spain, and 70,872 tons from Portugal.

It is interesting to note the relative quantities of sulphuric acid manufactured from home produced and imported pyrites, also from other substances The figures are as follows:

	Tons.
From German pyrites	80,015
From foreign pyrites	571,046
From zinc sulphide	136,868
In smelting works	50,738
From gas-purifying substances	6,915

Of the large quantity of sulphuric acid manufactured in Germany, only about 25,000 tons on an average are annually exported, the rest being consumed at home.

Fuming sulphuric acid (Nordhauser vitriol), used principally by the aniline dye-works, where it is needed for alizarine and many other dyes, was produced in 1898 to the extent of 14,000 tons, valued at £32,075.

Aniline and Other Dyes.—In 1835, Runge, of Berlin, discovered aniline, and in 1845 Hofmann, benzol in coal tar. In 1835, Mitscherlich discovered nitro-benzol, and Zinin showed in 1841 that it could be converted into aniline by reducing agents. Mansfield, working in Hofmann's laboratory, devised a process for the production of benzol from coal tar on a large scale, and by this means rendered the production of large quantities of aniline by way of benzol and nitro-benzol possible, as aniline itself only occurs in coal tar in very small quantities. These chemists may be considered to have laid the foundation of the German aniline dye industry. The colors have now run into the thousands.

Of historical interest is the fact that picric acid was the first artificially prepared organic dye. Though known for some time, it was not used for coloring purposes till about the year 1845.

Artificial Alizarine.—All these artificial dyes, and many more, while supplementing the natural dyes, did not displace them. In 1868, however, Graebe and Liebermann dealt the death blow to dyes prepared from madder root by their discovery of the preparation of the artificial alizarine colors from the anthracene contained in coal tar. In France alone the cultivation of madder root, estimated at an annual value of £1,700,000, was consequently abandoned. This industry was fostered and increased by Napoleon I., who introduced for this purpose red as the color of the trousers of the French infantry.

The rapidity of the decline in France is shown by the following figures:

Year.	Madder Root. Tons.
1870	25,000
1873	23,000
1875	14,000
1878	500

Of the world's annual production of alizarine in 1890, amounting to about 25,000 tons, Germany alone contributed about 22,000 tons.

After a pause, the discovery of aniline and other colors commenced again, and continued almost exclusively in Germany. This period furnishes perhaps the most brilliant chapter in organic chemical research, as applied to industrial purposes. It includes the discovery of eosene, chrysoidine and azo dyes, malachite green, methylene blue, alizarine green, alizarine cyanide, etc.

Of great importance for the dyeing of wool was the discovery made by Bottiger in 1883, that certain azodyes, which are derived from benzidine and similar bases can be employed for dyeing wool without the use of mordants. The preparation of these colors, which are manufactured in almost all tints, has attained great dimensions, and has played an important part in the development of the German dye industry. It is not possible to ascertain the value of the aniline dyes annually used in Germany, but the progress of the industry can be measured by the fact that the total value of organic dyes, manufactured in that country in 1898, was estimated at £6,000,000. It must be remembered also that prices declined more than one-half from 1878 to 1890.

The principal German dye works are now beginning to erect branch works in other countries, which will effect a saving in freight and customs duties. The Berlin aniline works have branches in America, France and Russia, and the Hochst works a branch in the latter country.

Artificial Indigo.—The discovery of a practical process of preparing artificial indigo has been made, and Germany, instead of importing indigo has begun to export it. This is the result of the labors of German chemists, such as Von Baeyer, Meyer, Heumann and others. The military authorities are now experimenting with this material for army uniforms, in which dark blue predominates. Experiments by the Bavarian Government have been successful, and should further tests be as satisfactory, a further blow will be dealt to the Indian natural indigo trade, already on the decline. In 1886, Germany imported 1,036 tons of indigo; in 1898, 118 tons; in 1899 the import practically ceased, and 256 tons were exported.

The patents for the process of preparing artificial indigo are exclusively in the control of one company, the Baden Aniline Dye and Soda Works, which employs over 100 chemists, and 6,000 workmen. The process employed is that of Heumann's synthesis of indigo, which starts from ortho-amido-benzol cacid as raw material. This substance was formerly too costly to allow artificial indigo to compete with the natural product, but later methods have been discovered which cheapen the process. In France, artificial indigo is also manufactured from ortho-nitrotoluol, but as the latter has to be imported from Germany, the cost of carriage and customs stands in the way of successful manufacture.

Natural Dyes.—Natural dyes are still used in Germany, in spite of the great advance in the production of artificial dyes. This may be explained by the great increase in the dyeing industries, and by the fact that for certain processes no suitable artificial substitute has yet been found. For example, the import of logwood, which is used for dyeing black, was 20,771 tons, valued at 125,000 l. in 1898, because artificial black dyes cannot as yet successfully compete with it. The import has, however, decreased by about 50 per cent. since 1875.

Concurrently with the increased production of artificial dyes, and the advance in the dyeing industries during the last ten years, the chemical investigation of the dyeing processes has completely revolutionized the methods of dyeing. New light was thrown upon the part played by mordants during dyeing, and their preparation and application greatly improved, and new compounds were introduced whose use had hitherto not been deemed possible. Of these last mentioned compounds the introduction of fluorine bodies as mordants was most noticeable. It is at present not possible to estimate in figures the benefits conferred by chemical science in this direction.

There are at present about 57 large dye works in operation, Germany heading the list. The countries where they are located are as follows:

Country.	Number of Works.
Germany	14
France	9
Russia (mostly branches of German works)	15
United Kingdom	7
Switzerland	7
America	2
Holland	2
Austria-Hungary	1

The German works employ over 500 trained chemists and 20,000 workmen, showing the importance of the industry in that country.

Among the Mills

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

S. A. Lazier's paper mills at Belleville have been burned. Loss, $35,000.

D. Manchester, of Ottawa, has sold out his woolen mill to Wm. A. Bradley.

The old carpet factory building at Elora is being turned into a factory for making harrows and land rollers.

The pulp mill at Chatham, N.B., has suspended work for the present and nearly 250 men are thrown out of employment.

T. S. Fisher, for many years in the wool broking business in Toronto, died last month. Deceased was 65 years of age, and was born in Scotland.

Robt. Meighen, president of the Cornwall woolen mills, has returned from the Old Country. He was welcomed with cheers on his appearance in the Board of Trade, Montreal.

A few nights ago the doors of the Excelsior woolen mills, Papineau road, Montreal, were forced open and some goods were carried away. The burglary is thought to be the work of boys.

A new fine system has been adopted by a Pennsylvania textile mill. The employees are to be fined for mistakes, and the fines so collected are to be set aside and distributed at stated periods among the employees who have not been fined.

Joseph Allen, of the British American Dyeing Company, Montreal, has returned from the Old Country where he has been spending some months investigating dyeing methods in England and Scotland.

T. B. Caldwell, woolen manufacturer of Lanark, has purchased the Malloch property at Calabogie. He will use the water-power for establishing a new industry, but the nature of the business is not stated.

The Dominion Cotton Mills Co.'s mill at Brantford may be considered out of business. The hands have been discharged, and most of the machinery has been removed to the syndicate's other mills.

The Cotton Manufacturers' Association of Fall River, with only one dissenting voice, decided last month to reduce the price of weaving from 19.8 to 17 cents per cut, which is practically a reduction in wages of 14 per cent. The reduction went into effect September 3, and will extend to all classes of labor in the mills. It will affect ultimately 30,000 operatives, whose wages hitherto amounted to $215,350 a week. Of this number 9,000 are represented by unions.

A short time ago the Canada Paper Co. sustained a serious loss by the burning of the St. Francis mill at Windsor Mills. The mill destroyed was the newest of three which comprise the works of the company there, and was equipped with all modern machinery and improvements. It was built about three years ago and contained the pulp mill and the machinery for making the paper for two of the leading Montreal newspapers. The building and machinery were totally destroyed, involving a loss of $200,000, and throwing over 80 hands out of employment. It will be rebuilt.

An order was recently made at Toronto by Justice MacMahon, for the winding-up of the Maritime Pulp Fibre Company on the application of Charles Reinsborrow, of Chatham, N.B., one of the creditors, who alleges that a substantial portion of the assets of the company were assigned to preferred creditors in Montreal without the consent of the other creditors or without payment of their claims. The company has its head office in Ontario, but Judge MacMahon referred all further proceedings to the Supreme Court of New Brunswick, as the property of the company is held in that province. When the matter came before Judge McLeod at St. John, N.B., Hon. L. J. Tweedie was appointed provisional liquidator. An application was also made to Judge Barker by the Bank of Montreal, acting for itself and other bondholders, for the appointment of a receiver. This application was granted and Warren C. Winslow, K.C., was appointed receiver. The Miramichi Advance has a long editorial on the subject, in which it alleges that Mr. Winslow is acting in the interest of the Bank of Montreal, and states that an application will be made to set aside his appointment. A permanent liquidator will be appointed on the 20th of Sept.

The Textile Recorder, of Manchester, thus refers to the late W. Whiteley, of the firm of William Whiteley & Sons, Ltd., Prospect Ironworks, Lockwood, Huddersfield, whose death was mentioned in last issue: Mr. Whiteley had for some time past suffered from weakness in his lungs, owing to hemorrhage caused by wool dust finding its way into the bronchial passages. Lately he contracted a chill, which resulted in bronchitis, from which he eventually died. The firm of Whiteley & Sons, Ltd., is so well known that although Mr. Whiteley was of a retiring disposition, his connection with the firm caused him to become well known, though indirectly, wherever wool was manufactured throughout the world. He was born in 1850, and received his early education at King James' School, Almondbury, afterwards proceeding to the College, Ripponden. After leaving school, he entered his father's business, learning the trade in the pattern shop and drawing office, until on the death of his father he entered into partnership with his two elder brothers. He was fortunate in entering a business which had already become eminent in the textile machinery world, but he applied himself to the improving of the various machines, with the result that many improvements have been applied under his instigation which have proved very successful. Under the guidance of J. Booth Whiteley and the deceased gentleman the works at Lockwood have been largely extended, while in addition to the machine for which the firm are noted (namely, the tentering machine), the firm have commenced to make self-acting mules and machinery for warping, winding, finishing and wool dyeing. Latterly the firm have commenced the manufacture of electrical machinery, this new departure being at the instigation of the deceased gentleman. Numerous patents have been taken out by Mr. Whiteley, dealing with almost every branch of the textile machine trade. He was until recently a director of the Blackman Ventilating Co., Ltd., and was a member of the Institute of Mechanical Engineers, and also of the Iron Trades Association.

Although United States textile manufacturers claim to be able to compete with the world there are still many lines of goods that are produced so much cheaper abroad that the difference in price affords a temptation to smugglers. Thirty-six bales of imported cloth were seized the other day at Richford, Vt. The cloth is valued at between $25,000 and $30,000. It was ingeniously packed in two cars of paper stock, one coming from Montreal and one from Toronto, the stock being consigned to parties in Holyoke, Mass. The centre was made up of waste, and the bales of cloth placed at the ends, where they were less liable to be detected by the officer. The car was filled as full as possible, so that in order to get at the smuggled goods the paper stock must be unloaded. Recently a car-load of wool sent into the States in a similar way was seized. The Montreal Witness gives the denouement of the Richford case as follows: One of the largest customs frauds on record has been exposed, and the goods seized, through the vigilance of E. H. Twohey, American customs officer here. The goods, it is alleged, consisted of a car-load of woolen cloth, on which the duty is 60 per cent. ad valorem, and 44 cents a pound; one of woolen rags, dutiable at 10 cents a pound, and two of unwashed wool, on which 11 cents a pound is due. The total value of the goods is about $100,000, and the duty amounts to about $40,000. According to the American customs authorities, the goods were shipped by L. Lipschitz, of 191 Wellington street, Montreal, to parties in Boston, who have been arrested. The goods were shipped as paper stock, and the space just inside the doors of the freight cars was filled with paper stock, which is not dutiable; while the wool, rags, etc., were stowed in the ends of the cars. Mr. Twohey discovered the fraud before the goods left Montreal, and communicated with the Hon. H. O. Merrill, collector at Richford. The Canada Mill Stock Company, 191 Wellington street, of which Mr. Lipschitz is a member, when questioned by a Witness representative stated that the rags and washed wool had been loaded in the cars by mistake; that the mistake was discovered after the goods were shipped, and the customs authorities at Burlington and Boston were communicated with, and requested to send the goods back. They claim that their communications have been acknowledged, so that they will have no difficulty in regaining their property. They deny, however, that there was any woolen cloth in their consignment, as they do not deal in it.

The old Baird woolen mill at Almonte is being dismantled.

The Galt Knitting Co. is building an extension to its factory.

John McGowan is installing a new engine in his flax mill at Aboyne.

T. E. Ainley is now boss carder with the Anchor Knitting Company, Almonte.

The sheriff last month took possession of the woolen mill of S. B. McKelvie, at Wroxeter.

The cotton mill premises of Wm. Parks & Son, Ltd., are to be put up at auction October 15th at St. John.

The Peterboro Underwear Co., Ltd., which was incorporated in 1899, with a capital of $20,000, have assigned.

The Waterloo, Ont., branch of the Canada Woolen Mills Co. is building an addition, 35 by 60 feet, two stories high, to be used as a shoddy mill. It will also increase its steam power.

Herbert Ballard, formerly boss knitter for the Standard Woolen Mills, Toronto, and now superintendent of the B. L. Battle Mnfg. Co., Warrenton, Ga., is visiting friends in Toronto.

A. A. Ayer has resigned the presidency of the Merchants Cotton Company, whose mills are at St. Henri. He has been replaced by James Crathern, with W. G. Cheney, vice-president, and an executive committee, consisting of the president and vice-president and A. A. Ayer, who is chairman of the committee.

During the thunderstorm on the 23rd August three employees of the Guelph carpet factory were knocked down by a bolt of lightning, while a number of houses and barns were struck in the vicinity. In the same storm the big motor in the Canadian Colored Cotton Mills Co.'s mill at Hamilton was burnt out, throwing 250 hands out of work temporarily.

A. W. Brodie, late of the Hespeler woolen mills, has bought the Streetsville woolen mill property from Thos. Long and has already started up. He will manufacture blankets, tweeds and flannels from Canadian wool, and when some new machinery is set up, which has been ordered, the mill will have a capacity of eight sets of cards. The style of the firm is A. W. Brodie & Co.

The Government inspector has inspected the blankets and Kersey cloth which James McLean, of the Pembroke woolen mills, has completed for the Indian Department. We understand the inspector expressed himself as highly pleased, not only with the quality of the material, but also with the workmanship of the goods. The contract consisted of about 1,200 gray blankets and about 5,000 yards of cloth.—Pembroke Observer.

A special to The Mail and Empire, dated 6th inst., says: The Canadian Woolen Mills Company at St. Hyacinthe has been compelled to announce a ten per cent. reduction of operatives' wages. This is owing to the great increase of imports of British woolens in consequence of the Laurier Government's preferential tariff. The Workingmen's Protective Union unanimously decided to oppose the reduction, and appointed a committee to call on the managing director, Mr. Moritz Boas, and ask him to lay the matter before a board of arbitration. The mill-owners are determined not to change their plans, because after losing heavily during the past two years they prefer to close down rather than continue without making any profit. As a last resort the directors consented to try another year, provided the employees would accept the reduction.

At the manufacturers' luncheon on the Exhibition grounds during the Toronto Industrial, P. W. Ellis, president of the Manufacturers' Association, urged Canadians to buy Canadian goods. He said if this course had been followed from the outset the United States census of ten years ago would not have shown that there were 750,000 Canadians in the United States. He believes that Canada is producing goods equal to any in the world. He pointed to the example of Queen Alexandra, who for the coronation ceremonies advised ladies to wear dresses of English material made by English labor. He also advocated government assistance for industries at points where labor would not otherwise be employed, such as the canning and woolen industries. He pointed to the progress made by the United States in the past century and remarked that such should be the high mark for Canada this century.

FABRIC ITEMS.

J. J. Turner & Sons' tent and awning factory at Peterborough sustained considerable damage by fire recently.

A fire on the premises of the Canadian Rubber Company, Montreal, caused the loss of two lives, and about $5,000 worth of property.

The Brandon Binder Twine Company, Ltd., is applying for a charter from the provincial government. The capital stock is fixed at $100,000.

The Specialty Manufacturing Company is a new concern that expects to start up in business in Hamilton to manufacture ladies' blouses, wrappers, skirts, whitewear, etc. R. A. McBride is to be the manager.

Markus Markus, manufacturers' agent and importer, and Max Teitelbaum, umbrella manufacturer, both of Montreal, have registered their intention of carrying on business together as the Standard Umbrella Manufacturing Company.

The examination of John Calder, in connection with the affairs of the estate of John Calder & Co., clothing manufacturers, Hamilton, was postponed till Sept. 10th, medical certificates having been put in to the effect that his health was in a precarious state.

A convention of tailors engaged in the semi-ready branch of the business was recently held in Montreal. One hears of political, social and other conventions, but a gathering of this kind is a new thing, and shows the expansion of that branch of the clothing trade.

Dealers in rubber belting find difficulty in filling their threshing orders satisfactorily this year owing to the fact that the demand is almost exclusively for an 8-inch belt whereas in other years 6 and 7 inch belts have been mostly taken. Stocks on hand are mostly all of the old sizes.

The Campbell Manufacturing Company, Ltd.; capital $75,000; head office, Montreal, has been incorporated to manufacture clothing. Frederick Richard Lannigan, George Pierce Butters, Benjamin Wesley Beyer, William Henry Butters and John Wesley Blair, Montreal, are the directors.

Coppley, Noyes & Randall have obtained incorporation; capital, $150,000; head office, Hamilton. Geo. C. Coppley, Ed. F. Noyes, Jas. Randall, Toronto; R. A. Lucas, Jas. M. Young, Hamilton. The company will manufacture men's clothing.

A. Mouat, who has for some time been travelling salesman for Gault Bros. & Co., Winnipeg, has severed his connection with that firm, and gone to Dauphin, where he intends opening a general store. The style will be Douglas & Mouat.

William Hastings, merchant tailor of Aurora, has secured the contract from the Postoffice Department at Ottawa to make up a full line of sample uniform suits for the employees of that department. These suits will be used as samples upon which to base tenders for the manufacture of this class of clothing.

A syndicate composed mostly of residents of Pittsburg, is said to have effected a combination of nearly all the laundry machinery manufacturing plants of the United States. The title of the company will be the American Laundry Machinery Manufacturing Company, and it will have a total capitalization of $16,500,000.

George Johnson, the Dominion statistician, figures out that Canada has in sight the raw material for 4,500,000,000 tons of wood pulp, and as the spruce reproduces itself in pulp wood size in thirty years, there is no fear of the supply being exhausted, provided that care is taken to prevent destruction by forest fires.

The latest discovery of the bacteriologist is that straw hats swarm with bacilli. When the hat pins which ladies use are drawn out they are covered with bacilli. This is where the danger comes in, for ladies have a habit of putting the pins in their mouths. The result is that they take the bacilli into the system.

Recent reports from Boston indicate an improvement in the wool market there. Demand is much better than for a long time, and there is a stronger undertone to the market. Holders, while willing to sell freely at current prices, will not make concessions of any kind, and claim to be getting all the business they can handle.

The Eastman Machine Co., manufacturers of cloth cutting machines, Toronto, have removed from George street to 247 Yonge street. The company now has offices in the United States, the headquarters there being at 45 North Division street, Buffalo. The work of this machine has been much admired by all who understand the trade.

In the fall dress fabrics the opinion of the more conservative members of the New York dry goods trade and of the leaders of fashion in Europe is that lace will be largely used on plain fabrics, such as cashmeres, venetians and broadcloths. Embellishments of some character will be an important feature of the better gowns. Mohair is reported to be steadily increasing in favor, and is very favorably considered for next spring.

Fashion has decided that the habit-back skirt, so generally popular a few seasons ago, is to be revived, and it is shown in various attractive modifications. Both the slender figure and that inclined to embonpoint will appear to advantage in this style of skirt when the details of adaptability are studied, while the woman whose figure is perfectly proportioned will readily appreciate the long, graceful lines that characterize these modes. Ten different styles of habit-back skirts are shown in the September Delineator.

With reference to the official investigation of the sweat shops at Hull, Que., mentioned elsewhere, it is said that the conditions amazed the inspectors, and while they were aware of the fact that men and women made low wages making clothing, they had no idea that people were actually working for $1 a week in Hull. Montreal is likely to be the next city investigated. The inspectors admit that more or less sweating is carried on in Montreal, but are of the opinion that the terrible conditions that exist in Hull and Ottawa do not obtain in Montreal.

About 25 miles of valuable pulp wood timber land is on fire at Westfield, N.B. It was recently purchased by a company which intended to get out the wood for pulp.

The forest wealth of Norway is being rapidly diminished by the assaults of lumbermen and pulp manufacturers. An expert commission appointed by the Government has made an alarming report showing that three trees are cut down annually for every one that grows. At the present rate the timber resources will be exhausted within half a century. The pulp manufacturers are the most destructive.

Hector Mackenzie, senior partner of the large wholesale dry goods firm of J. G. Mackenzie & Co., Montreal, died somewhat suddenly on the 20th of August. Though he had been suffering from dropsy for some time he was able to attend to business till within a few days of his death. He was a man of great business ability, and by his energy and perseverance had done much towards building up an immense trade by his firm. He was vice-president of the Merchants Bank of Canada, vice-president of the Montreal Telegraph Company, director of the Richelieu & Ontario Navigation Company and a large stockholder in the Bank of Montreal and other monetary institutions. Deceased was a liberal patron of music and art and a musician of no mean ability. He was 58 years of age.

The rubber clothing workers of Montreal have followed the cloth cap workers in forming a union. A discussion at one of its meetings the other evening, is reported by The Star as follows: It was stated that the prices paid to many women in their homes who work on ready-made clothing is insufficient to keep them, and that it is only by their receiving assistance in the work assigned to them, or through the means furnished by other members of their families that they are able to live at all. Many of the women are often compelled to toil 15 hours a day, or even longer, in order to gain a living. The amounts earned by young women and girls, who are employed by the sub-contractors, are, in almost every case, exceedingly low. A wage of from one to two dollars a week is not uncommon to women and girls who work in a shop forming part of the sub-contractor's home, while some even contribute part of their services for no return in money. Owing to other pressing business in connection with organization work the debate was postponed until the next meeting. A committee was appointed to make further investigations into the system. The system does not obtain to any extent in the rubber clothing business.

Hitherto the paper industry has been the least affected by the general economic depression from which the entire German industry has been suffering since the middle of last year. Recently a change has come. Manufacturers have lately received hardly any orders and stocks are accumulating. Prices have dropped from 15 to 25 per cent. To this must be added the competition which threatens from America. A representative of the Paper Trust of the United States of America, which includes 72 factories, is traveling in Germany, and endeavoring to secure orders and appoint agents. In spite of the existing import duty, the Americans are still making offers under the present market price. Notwithstanding this, the American factories have not been able to do much business in Germany, because the German manufacturers follow up the prices. The American factories have, however, the advantage of cheap water-power and of perfect machinery, so that their competition will, in course of time, make itself strongly felt in Germany. Under these circumstances the abolition of the import duty, which is favored in several quarters, would most seriously affect the entire German paper industry.

John Calder & Company has been incorporated with capital of $50,000. The incorporators are Arthur Horsfall, Alexander Langlois, Montreal, John Calder, Wm. Southam, John Milne, Hamilton, and the company will manufacture clothing at Hamilton.

G. A. Clare, Cyrus Dolph, Peter Bernhardt, Frederick Stecho, W. J. Schluter, C. R. Hanning, E. B. Salyeards, W. F. Mickles, John Werocbing, G. A. Ross and A. J. Jeffery, of Preston, Ont., have been incorporated as the Preston Glove Company, Ltd., with a share capital of $20,000.

Clark Bros., of New York, have purchased a large water power on St. Marguerite River, some miles from Seven Islands, and are going into the pulp business extensively. Large mills will be built and they have secured about 500 miles of spruce timber limits in the vicinity.

The London, Ont., Furniture Company's building, vacant for the last three years, has been bought by Robinson, Little & Co., wholesale dry goods dealers there, and will be used for the manufacture of shirt-waists, skirts and other kinds of women's wear.

There is quite a firm feeling in Canadian cotton goods and other domestic staples. Orders for the fall have been very good. The mills are not shading prices as they were some time ago, and there is said to be no likelihood of any shading in the near future. There is every prospect of a large sorting trade the coming fall.

The McPherson Shoe Company is about to absorb the business of H. B. McCarthy, another shoe manufacturer of Toronto, and is seeking an extension of time from the town of Orangeville in which to comply with the conditions of a $10,000 bonus by-law recently carried there. The extension will likely be granted.

Men of prominence in fabric circles are directing their attention towards materials, weaves and colors, for spring, 1902, says the New York Dry Goods Economist. Broadly speaking, and including all materials, silks, wools, worsted and cotton goods, there is every indication of a plain season, with the plain effects intensified in most fabrics. In colors black and white will predominate.

The Canadian flax market is in a strong position. While the crop will be larger than last year, it will not be sufficiently large to make any material change in prices. This is evident from the fact that linen goods at present are 12½ to 15 per cent. higher than they were last October. If the indications are to be relied on there will be difficulty in placing repeat orders at prices at which the goods were purchased at the opening of the season from the manufacturers.

THE WOOL MARKET.

The supply of wool available for the next sales in London on September 17, is extremely small. The stock is stated to be 308,000 bales, as compared with 370,000 bales on Oct. 9 last year. The quotations in London are Lincolns under 5d.; Second Irish Noils, 5¼d. to 5½d.

In the Toronto market the situation is unchanged, and dullness is the prevailing feature. There is no export demand whatever, and few or no transactions, the views of buyers and sellers being far apart. Quotations are 12½c. to 13c. for selected washed, unwashed 8c.

The Montreal market is also quiet, and no revival is looked for till after the English sales. The finer grades continue firm, but the mills are not buying more than enough to supply their immediate wants. We quote: Greasy Cape, 13c. to 15c.; Australian Greasy, 16c. to 17c.; B.A. washed, 25c to 32c.; Canadian pulled, 14c. to 18c.; do. washed fleece, 13½c. to 14½c.; Canadian greasy, 8½c. to 10c.; Northwest fleece, 10c. to 11c.

In Manitoba the clip is practically all in, and is the smallest for many years. The number of sheep kept in the province is falling off. This year's clip will not amount to more than 30,000 lbs. Eastern Assiniboia will add from 5,000 to 7,000 lbs. Some of this has been bought by local factories; the balance has been taken by Winnipeg dealers for shipment east. The ruling price throughout the season has been 7¼c. per pound delivered at Winnipeg. Most of the Territorial range wool is still held by ranchers, and is worth to-day 8 to 8½c. per pound at point of shipment.

LITERARY NOTES.

Readers of the September Century will not complain of any lack of variety in its contents. The opening pages of the magazine are taken up with an illustrated paper on "Mid-Air Dining Clubs," by Cleveland Moffett, who feels quite at ease on the top floors of twenty-story sky-scrapers, after his recent experiences with steeple climbers, bridge-builders, and other followers of "Careers of Danger and Daring." These down-town lunching places, to all of which women are admitted, and one of which is for women only, are favorably affecting the social characteristics of New York business men, as Mr. Moffett thinks; they certainly have a beneficial effect on the physical condition of their patrons. "Louis Philippe in the United States," by Jane Marsh Parker, traces the foot-steps of the exiled prince who became King of France, and his two brothers, on a memorable visit to the United States a hundred years ago. "Fighting Frost" is a paper of scientific interest and practical value by Alexander McAdie, who puts little faith in cannon as a destroyer of hailstorms. In the current instalment of his notes of the East of To-day and To-morrow, Bishop Potter records his "Impressions of the Hawaiian Islands;" and in an essay on "Burke and the French Revolution," Prof. Woodrow Wilson argues that the American doctrine of government conforms with Burke's ideal.

Among some superb photographs of "The Handsomest Laces in America," which occupy a double page in The Ladies' Home Journal for September, is shown an exquisite handkerchief, valued at $1,200. When one closely examines the web-like film, and the remarkable detail of the dainty design, this sum seems none too much to pay for such a piece of work. Its making doubtless occupied the greater part of one woman's life. The handkerchief is now the property of the Drexel Institute in Philadelphia, to which it was presented by the widow of George W. Childs, the famous journalist and philanthropist. The other beautiful laces shown on this page ar owned in New York and Boston, most of them being included in the collection loaned to the Metropolitan Museum of Art by Mrs. Astor. This collection is valued at the enormous sum of $62,000. This number of The Ladies' Home Journal is a special autumn fashion number, and seven pages are devoted to the styles.

A very practical article regarding Home and Family Life, by Professor Ellen M. Richards, appears in the September number of The Delineator. The first sentence is "The house is but the shell of the home, a shell meant to enclose and protect, not to crush it." These few words give an idea of the breadth and sympathy with which Professor Richards discusses the subject.

Effingham Wilson, Royal Exchange, London, Eng., has issued a new edition, making the twenty-sixth thousand, of the "Law of Joint-Stock Companies," by James Walter Smith, L.L.D., barrister of the Inner Temple. This compendium, one of the numerous popular legal hand-books published by this firm, includes the substance of the act which came into operation last January. It is published at 2s., and gives in a concise form just the information required by those who want to know quickly and authoritatively what the companies acts of Great Britain provide for. Dr. Smith is also the author of many other legal hand-books, whose popularity shows him to be possessed of that rare gift of being able to present the essence of an act in language which plain men can understand. He can summarize, and at the same time illuminate. His hand-books of the law of "Master and Servant," "Bills, Cheques, Notes and I.O.U.'s," "Public Meetings," etc., are standard treatises, while his legal tales and sketches, some of which have been published anonymously, exhibit a glow of humor and a vivacity of style which make the reader wonder why he was not drawn into the field of popular fiction in which he could have attained the highest rank.

The 14th annual edition of the Blue Book, Textile Directory, of the United States and Canada, has been issued by the Davison Pub. Co., 401 Broadway, New York, and shows some 350 new mills in the United States during the preceding year, the cotton and woolen branches showing a decrease, while in the knitting mills an increase is found of about 30 per cent. over the previous year. The map plates of the southern and middle states have been newly engraved and made clearer than heretofore, these showing all towns where textile plants are located. In view of the Pan-American, and South Carolina, Interstate and West Indian Expositions opening this year, the publishers have given views of the principal buildings of both Expositions, with explanatory matter. More details concerning the mills are given in the new edition than heretofore. All the old features have been retained, with the addition of new railroad and city maps, and the publishers have spared no expense in giving the fullest reports of the various mills throughout the United States and Canada. Office edition, $3; traveler's edition, $2.50.

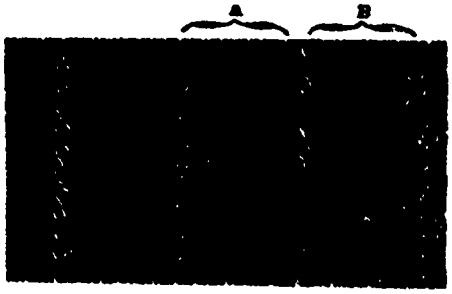
The Canadian Home Journal, hitherto conducted by J. S. Robertson & Co., Toronto, has been purchased by Hugh C. Maclean, publisher of The Ladies' Magazine. The Journal, which was established some years ago, will be discontinued as a distinct publication, and will be merged into The Ladies' Magazine, which has already won a place for itself as a home paper for Canadian women.

Among many interesting articles in the September Canadian Magazine is a description of Dawson as it is to-day, illustrated with several engravings of typical scenes in the Canadian city of the far north. The opposite end of our half of the continent is entertainingly described by W. L. Grant in an article entitled "Cape Breton, Past and Present." Prof. Adam Shortt gives an interesting pen picture of the Hon. Richard Cartwright, the ancestor of Sir Richard Cartwright. In an article, "Did Wolfe Take Quebec?" A. H. U. Colquhoun criticizes a recently published book designed to show that Townshend more than Wolfe was entitled to the honor of the capture of Quebec.

A. McKim & Co., the well-known advertising agents of Montreal, have just published the third edition of their Canadian Newspaper Directory, which makes a volume of 360 pages including advertisements. This work gives not only a complete list of all the newspapers and periodicals of Canada, but a concise description of each town where newspapers are published, showing the chief industrial and other features of every newspaper centre. This gazeteer is rendered of further value in this edition by a set of four newspaper maps, showing the location of every city, town and village where a paper is published. The work contains much valuable statistical and other information, and is highly creditable to the publishers, whose business progress has steadily grown since the firm was established about sixteen years ago.

TWILL STRIPES AT VARIOUS ANGLES.

Some of the newest patterns in worsted and woolen yarns are made on this system. The accompanying illustration shows the style of effects obtainable. It is a twist warp pattern, in which the ordinary four-end whipcord and eight-shaft sateen are combined, and the weaves run to the right and left alternately. The difference in the appearance of the twill, as regards clearness, is due to the twine of the yarn in section A opposing the twill, and in section B running in the same direction as the weave.



In plans in which warp weaves are combined, this play on the twine in the warp yarn has been practised for many years, and is always capable of giving a neat contrast of weave development. The finer twill is adjacent to the bands A, whilst the weft weave, which helps to give character to the pattern, adjoins section B.—Textile Recorder.

SMALLPOX IN SHANTY BLANKETS.

A correspondent of The Canadian Journal of Fabrics urges that since the cases of smallpox have become so numerous among the shanty men of North Ontario, and the disease has covered such a wide area, the Provincial Board of Health should move to have the wool blankets destroyed before the men return from the shanties. Woolen clothing, especially bed clothing, is capable of harboring and preserving the germs of smallpox for a long period, and these shanty blankets should certainly be completely destroyed, or gathered at safe centres and thoroughly fumigated.

Mount Forest has offered Morlock Bros., of Guelph, manufacturers of upholstery materials, a free factory, and a number of local business men say they will raise $30,000 for the formation of a company.

Samuel Roman, merchant; Herbert E. M. Levine, merchant; Wm. Roman, clerk; Marcus Roman, clerk, and Sidney Levine, commercial traveler, all of Montreal, have applied for incorporation as the Montreal Shirt and Overall Company, with a capital of $35,000, fifty shares of $100 each.

Mr. Gordon, representing the English shareholders in the Brussels Carpet Company of Sherbrooke has been in conference with the council of that city trying to adjust the trouble which had arisen over that establishment. It is understood a reorganization of the company has taken place, and Mr. Gordon assured the council that within twelve months the factory will be running up to all requirements of the by-law granting the bonus.

TEXTILE PUBLICATIONS.

In order to accommodate readers of The Canadian Journal of Fabrics, the publishers will be pleased to mail any book in the following list on receipt of the publisher's price, duty free. Books on technical and practical subjects, not in this list, can be obtained and mailed at publisher's prices. In ordering, please give full address, written plainly:

Loom Fixing; a handbook for loom fixers working on plain and fancy worsteds and woolens; containing chapters on shuttles and bobbins, and their management; head motion; putting in warps; filling; adjusting and starting new looms; chain building, etc.; 104 pages, by Albert Ainley $1 00

Technology of Textile Design; explains the designing for all kinds of fabrics executed on the harness loom, by E. A. Posselt 5 00

Structure of Fibers, Yarns and Fabrics, the most important work on the structure of cotton, wool, silk, flax, carding, combing, drawing and spinning, as well as calculations for the manufacture of textile fabrics, by E. A. Posselt 5 00

Textile Machinery Relating to Weaving, the first work of consequence ever published on the construction of modern power looms, by E. A. Posselt..... 3 00

The Jacquard Machine Analyzed and Explained; explains the various Jacquard machines in use, the tying up of Jacquard harness, card stamping and lacing, and how to make Jacquard designs, by E. A. Posselt..... 3 00

Textile Calculations; a complete guide to calculations relating to the construction of all kinds of yarns and fabrics, the analysis of cloth, etc., by E. A. Posselt.. 2 00

Wool Dyeing; an up-to-date book on the subject, by E. A. Posselt 2 00

Worrall's Directory of Cotton Spinners, Manufacturers, Dyers, Calico-printers and Bleachers of Lancashire, giving the mills of the British cotton district, with number of looms and spindles, products of the mills, cable addresses, etc $2 00

Worrall's Directory of the Textile Trades of Yorkshire, comprising the woolen, worsted, cotton, silk, linen, hemp, carpet, and all other textile mills, giving looms and spindles, and the various lines of goods manufactured, etc $2 00

Worrall's Textile Directory of the Manufacturing Districts of Ireland, Scotland, Wales, and the counties of Chester, Derby, Gloucester, Leiceste: Nottingham, Worcester, and other centres not included in preceding works, with capacity, products of mills, cable addresses 2 00

The Wool Carder's Vade-Mecum, by Bramwell; third edition, revised and enlarged: illustrated; 12mo..... 2 50

CHEMICALS AND DYESTUFFS.

Nothing new to report; market remains firm; demand for chemicals and dyestuffs is small.

Bleaching powder	$ 2 75	to	$ 3 00
Bicarb. soda	2 00	to	2 05
Sal soda	0 75	to	0 80
Carbolic acid, 1 lb. bottles	0 50	to	0 60
Caustic soda, 60°	2 35	to	2 60
Caustic soda, 70°	2 60	to	2 85
Chlorate of potash	0 13	to	0 15
Alum	1 35	to	1 50
Copperas	0 65	to	0 70
Sulphur flour	2 00	to	2 50
Sulphur roll	2 00	to	3 00
Sulphate of copper	6 00	to	6 25
White sugar of lead	0 08	to	0 08
Bich. potash	0 11	to	0 12
Sumac, Sicily, per ton	75 00	to	80 00
Soda ash, 48° to 58°	1 30	to	1 40
Chip logwood	1 90	to	2 00
Castor oil	0 09	to	0 10
Cocoanut oil	0 10	to	0 11

Opinions of the Press

CHART OF THE METRIC SYSTEM.

The publishers have received many letters complimenting them on the issue of the popular Chart of the Metric System of weights and measures. The following are a few sample opinions:

I have very much pleasure in seeing you step to the aid of those pressing the Metric System to the front. I shall be glad to call the attention of teachers to your chart. The Metric System has for a number of years—since I came into office—been taught in all the schools of the province; and the metric measures are those called for in the returns from all our high schools—dimensions of school rooms, etc. I have much pleasure in sending you a few copies of my brochure on the "Three Great Reforms," in which it will be seen that for a number of years I had been an advocate of the system—even in the conservative city of Toronto. Wishing you much success.—A. H. Mackay, Superintendent of Education, Nova Scotia.

I am in receipt of your favor of the 7th ult., together with a copy of The Canadian Engineer for June, and a specimen of the Chart of the Metric System prepared by your firm. I am very pleased to read your article, but I wish particularly to compliment you on the chart. It is, I believe, the best I have seen for explaining briefly the principles of the Metric System. It will afford my committee much pleasure to hear of this awakening interest in Canada. Australia too is showing a growing disposition to adopt Decimal Coinage and Metric Weights and Measures, and here we keep gaining a step month by month.—E. Johnson, Secretary Decimal Association, London, Eng.

We see that you, too, advocate the general adoption of the Metric System of weights and measures, and we believe that as much as possible everywhere the same means should be employed to accomplish the desired aim. The widest possible distribution of your chart would no doubt be a good step forward. We request you therefore to forward to us two copies for our office and for the library of the American Society of Dyers.—L. M. Carriat, Philadelphia.

The Monetary Times has a review of your Chart of the Metric System. I notice the price is stated at ten cents per copy, but if you have any other more expensive editions printed, I should be glad to receive a copy or two; as it is my intention to frame a copy (if possible), and present it to the library of the society of which I am an associate, viz., the Incorporated Accountants (Eng.). It is high time that British traders and accountants awoke to the necessity of adopting decimal coinage and measures. Enclosed please find $1 (Canadian), to cover your expenses for as many copies as the remittance will pay for. Trusting you will be able to assist our efforts on this side to foster "intercolonial and home-country" trade, and lessen the tide of German competition, which is a danger to all the English-speaking countries, if Germany gets the upper hand (both politically and socially), and assuring you of the awakening of the British to their surrounding dangers of subsidized continental competition.—E. Woodroffe, 121 Stapleton Hall Road, Stroud Green, London, England.

Please accept my thanks for the Metric System Charts. The adoption of the Metric System must shortly take place, as everything is to be said for it and next to nothing against it. As to the chart, I consider it is a valuable one, and one which every progressive citizen ought to have in his home. The mass of information, which it explains, is handled in such a simple manner that anybody can understand it without becoming in the least confused as to the use of the different terms, which is the only drawback, that I know of, to the Metric System. There is no doubt though that, if the system were adopted, the terms would be abbreviated to suit the rapid business methods this side of the Atlantic. I expect that a number of people, to whom I have shown the chart, will be calling upon you for copies of it ere long, as they have already expressed intentions of doing so.—Dermot McEvoy, Mechanical Engineer.

Joseph Sharples, representing the Weavers, Winders and Beamers' Association of Burnley, Eng., is now on a visit to Canada and the United States, investigating the conditions of labor, rates of wages, hours of work, quality of cotton, character of machinery, etc., for the purpose of comparing the conditions with their own. After visiting Montreal and other cotton mill centres of Canada he goes to Massachusetts, Rhode Island, Pennsylvania and other textile states across the border.

The by-law to grant aid to the newly organized Canadian Cordage Co. at Peterboro, referred to recently, has been carried, and work will be proceeded with. The company undertakes to spend $60,000 in machinery and buildings, and is to employ 75 hands. The new cordage factory at Walkerton is now running, but the scheme to establish similar works at Chatham, Ont., fell through. The Ontario Farmer's Cordage Co.'s works, which opened last April, has been running night and day till now It is a mill of 60 spindles.

The Montreal Cotton Company has declared a quarterly dividend of 2 per cent., being at he rate of 8 per cent. per annum, which will be paid to shareholders on 16th September.