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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIII. TORONTO, MAY, 1896 No. 5

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Editorial

Co-Operative Manufacturing

At a meeting at Canterbury recently, H. Vivian (of the Co-operative Production Federation) gave some interesting and remarkable particulars in connection with the advance of co-operative production, which, he contended, constituted a great factor for the effacement of many of the quarrels which arose between capital and labor. Ten years ago they had fifteen concerns working on a co-operative basis, the workers sharing in the profits and having a voice in the control of the affairs of the societies. The capital of these concerns was a little over £100,000, and their trade was equal to £160,000 per annum. To-day there were no fewer than 200 of these concerns, with a capital of one million sterling, and a yearly trade of two millions. Let them look at one or two of these societies. The Leicester Co-operative Hosiery Society began in a small room in a cottage, for which 1s. a week was paid for rent. To-day that society could boast of a trade of over £40,000 per annum and a capital of £30,000—all being managed by the workpeople themselves. A little over two years ago he was invited to address the workpeople engaged in the clothing industry at Kettering, and he strongly advised them to go in for co-operative production. About forty joined the movement, and were in consequence dismissed from their employment, with the result that a co-operative clothing factory was started without delay—much sooner than was originally contemplated. Look at the result; in two years they had moved into four factories, because one after the other became too small for their business, and the last factory they had moved into cost about £4,000 to obtain and fit up, so that at the present time the Kettering working people who were driven from their employment because they joined the co-operative production movement, possessed a factory which was far superior to any one possessed by their late employers. In two years also that society had improved its earnings by 25 per cent. beyond what the workmen were getting before; they had adopted the eight hours' days, and had a factory planned in every way for the comfort of the workpeople and lighted by electricity. He had never yet known a Trades Union with dozens of strikes and locks-out obtain for the workpeople in that Union what this productive association had done in two years. The reason was that the workpeople had got inside their industry and were tackling it from that standpoint, instead of from the outside. That was the difference between Trades Unionism and co-operative production. Take as another example, the delicate and difficult industry of silk production at Macclesfield. Between three and four years ago they started a co-operative movement at Macclesfield, and at first relied on the co-operative movement alone. They did not succeed, whereupon the manager suggested that they should go into the open market. Their shares at that time were not worth 7s. 6d. in the £, but the promoters struck out and opened up communication with London,

Paris, Vienna, and other leading markets. From that time the demand had been so great that the difficulty was to execute orders, and at the present time they stood at the head of the silk industry. They were paying the best wages in the town of Macclesfield, and during the last half-year gave a further 15 per cent. on all the wages their workmen had received. Here, then, was a reply to those who said such concerns could not succeed. The Macclesfield silk weavers were doing a turnover of nearly £34,000 a year, which in silk goods meant an enormous turnover, and one half of the money was spent in wages. He believed it would not be long before the best employers of labor would come half-way to meet them; indeed, only recently a clothing manufacturer in the West Riding of Yorkshire had copied them by making his 700 employees his partners in the concern.

Property in Trade Names.

As a decision of the British Privy Council is always a precedent in the Canadian Courts, there will be much interest taken among all users of trade marks and trade names, in Canada, in the recent decision of the highest Court in the realm in the camel-hair belting case. This dispute has at length been finally decided, and will now take its place as the leading case on the subject of property in trade names. The facts may be briefly recapitulated. T. Reddaway & Co. are well known manufacturers of belting made of camel-hair. Indeed, in the trade the term "camel-hair belting" has come to mean Reddaway's article. But George Banham & Co. also made a belting largely composed of camel-hair, and this they presently began to put on the market as "camel-hair belting." Reddaway & Co. brought an action to restrain them from doing so, and Justice Collins granted the injunction asked for. George Banham & Co. applied to the Court of Appeal, which reversed the decision of the lower court. The case was then taken to the House of Lords, which has now restored the judgment of Justice Collins. It is, therefore, established that property can be obtained by use and prescription in a trade name which is in itself merely descriptive of the nature of an article of commerce. Banham & Co. can sell their produce as "Banham's camel-hair belting" or with any other qualifying word prefixed to the term "camel-hair belting;" but the latter term used alone is the exclusive property of Reddaway & Co.

Woolen v. Worsted.

A number of papers which claim to be well informed in matters textile claim that worsteds are no longer enjoying the popular favor to the detriment of the woolen manufacturer. While this would be good news to most of our readers if it were true, we fear that an examination of the facts does not tend to confirm it. Worsteds have sold exceedingly well all spring in the wholesale trade, and the manufacturers are now booking orders as fast as they wish to take them for the fall. There has been an increased demand for tweeds for bicycle suitings, it is true, aggregating a great number of yards, but this does not interfere with the worsted consumption, as these suits are not for ordinary wear, but are extras. There is also a tendency amongst the merchant tailors handling the most expensive lines to push homespun effects in green and greenish shades, but this exclusive demand cannot be said to be a feature of the market. The mill that takes hold of this idea, however, and has a not too expensive line of these goods before the public next season, will make a lot of money out of them.

Textile Asbestos.

There may be room for Canadian enterprise in a new departure in shoe manufacturing, which has just been made in England. Asbestos is used for a lining of boots and shoes, and is also used in the soles. It is claimed that this keeps out the cold in winter and the heat in summer. If this use of the fabric really proves satisfactory there would be a great demand for asbestos cloth which the mines and water powers of Canada can supply to great advantage.

A CANADIAN TRAMP IN NEW ENGLAND.

(Correspondence CANADIAN JOURNAL OF FABRICS.)

The textile trades of New England have not been in a worse position for years, and the peculiarity of the situation is that every branch of the trade—from the dealer in the first raw material, cotton and wool, down to the operative in the mill and the storekeeper who is dependent on him—are in the same unsatisfactory state. This is unusual, for while some branches of the textile industries here may be depressed from special causes, others will be in a tolerably safe position; but now all alike—from the cotton Pharaoh that sitteth on his throne to him that worketh in the mill—feel the pinch of an evil time, and the disheartening part of it is that there is no expectation of any improvement for at least several months to come. In the cotton branch better times are looked for only when the new cotton crop comes in sight; while the woolen branch hang their hopes on the demolition of Cleveland's Cabinet and the return of the Republicans to power, who will build the tariff wall yet higher. The amount of raw cotton in sight at the present date has fallen to a surprisingly small figure, and the remnant is held at such figures by its possessors that the mills refuse to buy. Their refusal is justified by the fact that in the existing condition of general trade they cannot get a corresponding rise in price for the manufactured goods—in fact, with few exceptions, they cannot get any advance at all. Many of them, therefore, as they use up their stocks close down altogether, and mill after mill has shut down in the manufacturing districts of Lowell, Lawrence, Fall River, etc. When there is no hope of going on except on the base of prices that will not bring back the cost of the raw material, what else is there to do? In the woolen trade, raw American wool last week touched the lowest point ever recorded. Some important failures among wool men have occurred, but not so many as one might have expected. Wool is like wheat or coal—it must be had sooner or later, and

with the dealers it is only a matter of waiting till the tide turns. Viewed from a Canadian standpoint, it is astonishing that any thinking manufacturer could hope for relief from this situation in a tax on their own raw material, and yet a large percentage of the American woolen manufacturers—possibly a majority of them—blame the Wilson bill (which gave them free wool and a slightly reduced protection on manufactured goods) for their present trouble, and are as ready as any other element to turn out the Democrats, which will as surely be done as that Sir Ch——but let us not anticipate, nor is it my wish to get mixed up in party politics. The worsted men point out that in the last year of the McKinley tariff the importation of worsteds from England was under $4,000,000 a year, while last year it has risen to $8,000,000. One man informed me that prices had got to such a pass that, seeing he could not hope to realize any margin of profit on his goods, he closed down his mill and actually became an importer himself, with the result that he made ten per cent. on his turn over. Had he gone on manufacturing, he would have lost about that percentage on his output. There is no gainsaying the fact of the depression in the woolen, and more especially in the worsted, trade, but whether the American manufacturer has traced the causes of it correctly is another matter. Is he sure that he has not fallen behind his British competitor in the race for new and improved machinery and in greater skill? Has he considered the advantage the British manufacturer has in the employment of cheap capital and in the low cost of manufacturing under free trade conditions? If you raise these questions to the mill owner here, you only re-open the old school-boy debate on protection *vs.* free trade, and you find the average American manufacturer has not yet opened his oyster heart (I mean it only in a fiscal sense), but is prepared to shout "Great is Diana of the Ephesians!" till all is blue again. Nevertheless there are quite a few thinking Americans who begin to realize that this oyster-like policy of living within their own shell is making them, in more senses than one, a nation of Chinese. "No man liveth to himself" is as applicable to a nation as to an individual, and these thinkers now see that their boast of being able to live self-contained is commercially a vain conceit—a theory that will forever be contradicted by the facts of commercial life. They see that the time has arrived when by coming out and being a part of the greater world outside of themselves, they have really much more to gain than to lose. Even now many manufacturers of specialties are finding a market abroad for goods in competition with the world, in spite of the disabilities they suffer from high cost of production and lack of facilities for financing in foreign countries. If this can be done now, how much more might be done under freer conditions of trade? These men see with dismay the ill-considered reaction now going on, and lament the set-back which the nation will receive for perhaps twenty years by the revival of McKinleyism. The masses, as usual, have not looked below the surface, and Cleveland, the one Moses in this Israel who had the ability to lead his people out of the wilderness, has smitten the rock in anger, and, as a consequence, can never bring them to the promised land. The rock-smiting was done when he sent that Sunday-written message on the Venezuelan question, which, by costing his country hundreds of millions in damaged credit and paralyzed industries, has put his own good tariff reform intentions in a false light. The people are now attributing to his tariff work what is really due to that one false step in his career—a step, however, which could not have been so disastrous, had it not been for the lamentable hatred of England which still lies latent in the American breast.

Boston, Mass., 12th May, 1896.

For THE CANADIAN JOURNAL OF FABRICS.

INCREASING THE PRODUCTION OF A TEXTILE MILL.

BY G. DAMON RICE.

To get a large production from the cards, it is not a good plan to drive them. It is all right if you have good stock free from all sorts of burrs and dirt, but when you have long and short stock all mixed up, then you cannot get good work off if you rush things. If one has seven or eight-run yarn to make, and the stock is not very good, perhaps 30 or 40 per cent. cotton, 20 or 25 per cent. garnetted stock, and 40 or 50 per cent. third or fourth quality wool, then you will be obliged to give at least half draft to make good spinning. Then if you have a wide ring you must run your stock very light on your rings, but if you have a narrow ring you can have it just as heavy again on the narrow ring as on the wide ring, and yet you will have your roping just the same weight. You can easily gain a little more roping on the narrow ring than on the wide ring, and yet have better roping, for the reason that it is too light on the wide rings, and there are apt to be poor places in the roping, while on the narrow ring it is quite heavy comparatively, and will strip so much better that one would hardly know it for the same stock. You can also run your doffers a great deal slower and get a much better production than on the wide ring; at the same time better work.

Line up things, and if you want a good production have the cotton openers and lappers put in line with other machines. Have the alleyway run the whole length of the building, with fire buckets and hose within handy reach. Patent sprinklers are good things in their way, but for a fire starting on a machine you want a bucket at once. Around the space covered with sheet iron in front of the mixing picker, put a fence say three feet high, leaving open space at the side. This will keep stock out of alleyway, and aid against passing travel. Now, having got the machines in position, let me look them over. Say I take the burr picker; first, this is a machine that so long as cotton will go through it is thought to be all right. If the man who tends it cleans up a little when the lot is run through, it is all that is expected. Old press boards are good here. Tack them on well, and they save a

great deal of time cleaning rough wall and partition, and are also a good preventative of color streaks. The floor in front of the little mixing picker should be covered with sheet iron, joints water tight, for here will be done the oiling of the stock. The doors to fly rooms should be put on either side of picker; the duster, or other waste-cleaning machines, should be set near the wall so as to get the best results from the blow pipe.

These improvements will tend to increase product. But judgment is needed at every point, for we do not want tender goods as a consequence of rushing tactics. There are eight distinct causes for producing tender goods, and they are classified as follows: 1. Tender cotton or other material used in the construction of the cloth. 2. Improper preparation, such as too powerful ingredients, or too excessive heat applied to the solution. 3. By using an excessive amount of sulphuric acid in coloring the cloth. 4. By being cut on the cards. 5. By employing too little twist in the yarns. 6. By an insufficient number of picks of filling in the textures. 7. By too long bleaching. 8. By excessive gigging.

The fibre is often injured and weakened by too powerful ingredients. The strong liquor can easily penetrate to the very core of the fibre, and destroy the delicate tissues and cells of which it is composed, and thus render it too weak for general use in the formation of yarns for woven textiles. By using an excessive amount of sulphuric acid in coloring, the fibre will be destroyed or partially deprived of its strength. The fibre immediately absorbs quantities of chemicals when it is brought into contact with them in the dye vat. In case an excess of sulphuric acid is in the liquor, that powerful drug will envelop the fibres and destroy their retaining power. These fibres, when manufactured into yarns or other goods, must necessarily impart that harsh, brittle and non-elastic property which now predominates in them. The application of the dyestuffs in some cases impoverishes the entire structure of the fibre.

The fibre of New Orleans cotton will average 1-900 of an inch in diameter; and 36 of these fibres twisted around each other will form a 38 cotton thread. The finer grades of cotton yarns are spun from Sea Island and long-stapled Egyptian cottons, and from them are made muslins, laces, and similar goods. From Brazil and the better classes of short stapled American cotton are procured such textile fabrics as cambrics, calicoes, shirtings and sheetings, and from the inferior qualities of American and Surat are spun the coarse yarns required for fustians and other heavy fabrics. From warps of cotton and filling of woolen or worsted are formed a large variety of textile fabrics for clothing purposes. Cotton is successfully utilized in combination with wool, silk, alpaca, and other fibres.

To find out what fibre is in a sample is a point worthy of notice. Previous to weighing the sample should be washed in a warm solution of soda to remove any dirt possibly present, and then repeatedly washed out in abundant cold water. As a cotton mixed woolen yarn must be subjected to the same washing process, an incidental loss by washing is of no consequence for investigation. The washed sample is then for five minutes boiled in a 10 per cent. solution of caustic soda, several times carefully washed out in clear water, dried and weighed. In boiling in the lye the liquid is colored distinctly yellow; besides, it evolves an odor similar to that which is produced in dissolving wool in solution of caustic soda. It is to be expected, therefore, that the lye has not remained without action upon the cotton. The swatch will weigh 3.532 grm. before the boiling and 3.459 grm. after, and, therefore, losing 0.073 grm., that is a loss of 2.13 per cent. This is the usual proportion of loss. There are other ways of testing. Cupric ammoniate dissolves very rapidly, but is objectionable, because it attacks the fibre and because the residual appears strongly colored by the components of the solvent, and its weight is thereby altered. Strong sulphuric acid alters the fibre also, but dilute acid does not dissolve the fibre. I have, therefore, tried hydrochloric acid. The ordinary pure commercial acid, as used in laboratories, did not dissolve the fibre in the cold even after several days' action. When heated to the boil, the fibre was dissolved. I then tried fuming, that is, a much stronger hydrochloric acid. I remark in this connection for those not intimate with chemical things, that the article bought in commerce as hydrochloric acid is not pure acid, but a solution of the originally gaseous hydrochloric acid in water. If comparatively much hydrochloric acid is dissolved in the liquid, gaseous hydrochloric acid escapes and forms with the ever present aqueous vapors of the air mists of liquid acid. On account of this formation of mist, we call such acid fuming The acid used by me had specific gravity 1.175 and contained 34 7 per cent. gaseous hydrochloric acid. An immersion of mixed yarn in this acid at the ordinary temperature, of only one half minute, would be sufficient to completely dissolve the fibre.

Cotton and woolen mixes are frequent. Use only thoroughly scoured and dried wool, which should be picked and oiled, and then passed through an ordinary first breaker card, for the purpose of getting the fibres in a straight and uniform condition, and to clear out the lumps and the knots. The cotton should be well cleaned, and then passed through the first breaker card, which latter operation renders it similar in form and substance to that of the wool fibre. Each is now picked separately, and then mixed and picked once or twice together. In preparing mixes, it is important to always consider the great diversity which exists in the principal fibres.

A fairly good soap for cotton manufacturing purpose can be produced in the following way: Take 100 lbs. of potash soap and add to it about 4 gallons (50 lbs.) of water. Put it into a pan, and gently heat and stir it so as to mix well together; as soon as the water is taken up, stop heating, and a clear, homogeneous and much stiffer soap will be produced, which will improve by keeping for a short time. With mechanical mixing

apparatus and large pans, soft soap can easily be produced on quite a large scale by this method. It is sometimes required to know how much water is in the soap, for no one will wish to pay for 40 or 50 per cent. of water. To effect a test, take a piece of soap from the centre of the barrel, say one pound exact weight, cut it any way you choose, only so it will be properly dried with a moderate heat. Re-weigh it, and the difference in weight will show the amount of water. Considering the difference in the cost of water and soap, the temptation to add an unnecessary quantity is very great, consequently manufacturers should occasionally have the washerman test the soap. Some of the adulterations in soaps include fuller's earth, pipe clay, yellow ochre, soapstone, talc, etc., and this can only be detected by the aid of chemistry.

DESIGNS IN WOVEN FABRICS.

ABSTRACT OF A LECTURE GIVEN BY PROF. ROBERTS BEAUMONT, AT THE IMPERIAL INSTITUTE.

From the earliest historical times the art of developing design in woven materials has been known and practised with varying degrees of success. Probably textile fabrics were constructed by rude mechanism before the process of spinning was discovered; for, by plaiting —which is weaving in the most elementary stage—it is possible, with certain kinds of grasses and rushes, to produce fabrics of a coarse, open texture. At a very early period in the history of the weaver's art, man's natural love of ornament would lead to the embellishment of the fabric with color, at a later date by embroidery, and, perhaps, last of all, by weaving. Patterns due to blending colors no doubt preceded all others, on account of the facility with which they could be applied to the woven structure, by staining individual fibres, or by painting; and, as embroidered effects are obtainable by a simple instrument like the needle, they are likely to have been developed before the class of ornamentation resulting from the complex process of weaving. From what is known of the appliances used by the ancient Egyptians, the patterns they produced must have been due mainly to embroidery or a kindred operation.

As the art of textile designing is now understood, it is purely a derivative of the operations of the loom, which constructs the texture of the design simultaneously. Limitations result which are peculiar to the textile arts, and have no place in any other description of decorative work. Woven ornament is in no sense distinct from, but an essential feature of, the routine of manufacture; in other words, the same scheme of weaving which builds the fabric gives character and definition to the design, and it is, in consequence, impossible to establish any complete analogy between the textile and other species of design.

Pattern is obtained in woven textiles by four methods—first, by using in new forms various classes of fibres; second, by employing novel yarns; third, by modifying the construction of the fabric; and fourth, by the origination of fresh ornamental details; and, of course, by combining two or more of these sources of textile effect. The materials alone afford facilities for the production of novelties in textile work, for they are so varied in quality, fineness, and structure, that, by a skilful combination of them, it is feasible to produce new cloths.

During recent years, the scope for design in fabrics has been extended by the invention of new threads. In old textures there is not that diversity of yarns characterizing those of modern manufacture. Several of the most antique textiles extant contain fine threads of silver or gold twisted around cotton or woolen yarns, but there does not appear to have been any definite attempt made to produce a distinct style of pattern by some extraordinary quality possessed by the yarns used. The materials and methods of converting them into yarns are most important factors in textile design, and French craftsmen, in particular, take cognizance of them—the masterpieces of their looms proving them to be perfectly acquainted with the nature and possibilities of the materials they utilized.

The build of the fabric was also closely related to, and in a large degree modified the pattern developed in the loom. Just as the security of a building depends on the system of masonry applied in its erection, so the solidity and soundness, as well as the beauty, of a textile, are affected by the method of interlacing warp and weft yarns, by contrasts due to weave, or to systems of cloth construction; and, while not so pronounced as those due to color, yet, to an expert in weaving, incongruity here is quite as unsatisfactory as in a blend of colors.

It is not unfrequently more difficult to produce a novel fabric by inventing a new scheme of weaving than to create a fresh pattern. The former work involves an acquaintance with technicalities which experiment and research can only give, whereas the latter is possible when the designer has a natural power of origination, associated with a practical knowledge of drawing and of decorative art. Judging the textile arts from a purely decorative standpoint, there are many ancient fabrics which will always deserve to be consulted, but mechanically and textually, these arts are still only partially developed. The science of weaving has, to some extent, yet to be explored, and it is as difficult to foreshadow its developments as to limit its possibilities.

Color is, of course, an integral part of textile designing. The technical branches of the work are governed by known laws. This phase of woven design required—firstly, a natural and cultured feeling for color, and secondly, a knowledge of cloth structure. A designer's eye for color might be improved by studying harmonious shade-compositions, but unless he understood the forms of pattern yielded by certain arrangements of threads when actually woven, he could only attain medicore success in this work.

Of all branches of weaving, that which related to the production of ornamental textures is the most com-

plicated in character. It combines the highest technique with artistic qualities. There are many points of dissimilarity between ancient and modern fabrics of a decorative class. Those produced from the 15th to the 17th centuries are pregnant in suggestiveness to both the art designer and the weaver. Having been woven before the jacquard loom was invented, they are doubly interesting, as illustrating the possibilities of manual labor and the skill of the ancient craftsman. Although remarkable improvements have been made in the mechanism of the loom (scope for designing having been manifoldly increased), yet the main principles of fabric structure have remained unchanged; hence the works of the old weavers of Florence, Genoa, Milan and Lyons are instructive, not simply in an antiquarian sense, but also on account of their texture and pattern, and particularly of their color combinations.

As a rule manually-executed fabrics are richer in detail than those produced automatically. The hand weaver could make minute changes in the working of the loom impossible by the methods now adopted, which accounted for the lack of rigid uniformity in the repetition of design in old fabrics, and which sometimes added to their freshness, and made them unique in composition. While these facts are admitted, it must be allowed that the textiles produced in recent years are equal in design, color and technical execution to those of any other period. This is not said in depreciation of ancient craftsmanship, but rather in justification of modern work. Realistic, as well as conventionalized, designs are now woven with an exactness of delineation superior to the best performance of the old weaver.

It is somewhat anomalous that, in an industry to which both the mechanical and chemical sciences are applied, and to which art is so closely related, it should not have been considered needful in this country, until about 1874, to create schools for furthering its true development. More is required than the mere apprenticeship training which was thought adequate by our forefathers, if the modern designers and manufacturers are to produce fabrics which will excel those made in France and Germany.

More than fifty years ago our continental competitors recognized the importance of passing their craftsmen through a sound scheme of study in the technology of loom work. How long we might have remained content with the older and more imperfect training acquired by mill practice, but for the creation of the textile school at Leeds by the Clothworkers' Co. (who were in this country the pioneers of textile education) it is impossible to say. We still need to form in connection with our weaving schools such museums as are available to those attending the best Ecoles de Tissage of France and the Webe-Schulen of Germany. When, educationally, we are in all points as well qualified as the foreigner, the issue of the industrial struggle need not be feared. In many departments of woven manufacturing we are ahead of Belgians, French and Germans alike; we ought, therefore, not only to be able to maintain, but also to consolidate that position of supremacy which has been secured by inventive genius and natural aptitude for craftsmanship.

THE PRESENT CONDITION OF THE WOOLEN INDUSTRY IN CANADA.

BY WOOLEN MANUFACTURER.

(Continued.)

In one of our leading daily newspapers an article has appeared showing the progress made by the woolen industry of Canada since the adoption of the national policy of protection for manufacturers. The statement was therein made that woolen manufactured goods in tweeds, hosiery and blankets were in several lines cheaper, or as cheap, in Canada as similar lines made either in Great Britain or the United States. In these exciting times of Dominion parliamentary election the advocates of the fiscal policy are making statements pro and con that require a judicial mind to extract therefrom the modicum of truth they may contain.

As far as the woolen industry is concerned, there are no lines of goods made either in tweeds, pilots, or hosiery, but what the duties, ad valorem and specific, levied by the Dominion fully protect from similar lines manufactured in Great Britain. It is that only which enables our woolen manufacturers to compete successfully in specified lines with foreign competitors. It is true that in low and medium tweeds and white blankets, and similar grades in hosiery, certain manufacturers have successfully made goods equal to the imported goods in style, finish and pattern, and certainly more suitable to the climate and taste of the consumer in the Dominion. But if the 25 to 37½ per cent. duties were levelled, and we had free trade as they have it in England, what then would happen? Who in the woolen industry is bold enough to stand by and maintain the statement of the daily newspapers that we would be on an equal footing in the respects therein stated, if the conditions were reversed? The survival of the fittest would soon be manifested.

But what are the conditions that regulate the acknowledged course of commercial relationship? If conditions are equal, no need for preferential taxation. If it is a question of nursing and assisting to establish industries to manufacture all that is needed for the wants of the inhabitants of the Dominion, this has been achieved to a very large extent since the advent of the national policy.

The farmer was promised in 1878, by excess of party zeal, a rise in price of his products. No one but a fool would ever make such a ridiculous promise when the market price of such agricultural products are regulated in a foreign country where the overplus products of the whole world are marketed, viz., Liverpool and London in England, and Chicago in the States. It is different with the products of our woolen mills. We supply only Canada, and that demand regulates the supply—and prices too. If our agricultural products,

timber, and minerals fall off in demand and prices, the over-production and over-stocking consequent thereon cause our people to feel the pinch and it recoils back upon our industries, which are dependent upon supplying the people whose means are thus reduced. The factories have over-produced and keen competition sets in and margins of profit disappear.

This has been the condition of business with the woolen trade for the last eight years. The prices of tweeds, blankets, etoffes and hosiery have been falling during the whole of the last eight years. Every year we felt that the prices were at the lowest; but the next season saw prices lower still. One hears of a number of manufacturing concerns having made no profit for years. The wages of the workpeople have been cut down in some cases 30 to 40 per cent. Mill superintendents have been changed for not making goods to a profit. I heard of one woolen mill owner confessing to have losses of over $50,000 in six years. Another concern (limited), $20,000 in less time than six years, and yet another concern that has not paid any profit over and above its expenses for over ten years. A large concern, with capital stock of $250,000, and which did a roaring business last year, did not net two per cent. profit. Did they allow sufficient for depreciation? I hear it said they did not; if they had there would have been no showing at all of margin. Of course, the manager suffered in reputation. But was it the fault of the manager, or was it the necessity for change in the equipment of the factory? This last idea may apply to some of the concerns named above. Or are the managerial expenses too heavy, and have they not been reduced at the time of the reduction of the workpeople's wages? If so, that sweeps away any likely margin of profit.

A concern which came to grief twelve months ago, with not a single cent for the creditors, paid $6,000 and $8,000 a year for managing-director, secretary, mill superintendent and designer. When the workpeople of this mill were being reduced 10 and 15 per cent., this august quartette would not have their salaries reduced. In another woolen syndicate the managing-director and secretary take $3,600. and they cannot manage the factory. It is not known how many mill superintendents they have discharged because the margin of profits was nil.

These were among the representative concerns that went to Ottawa and petitioned the Dominion Ministers two years ago to increase the duties upon woolen goods. Was it the intention of the authors of preferential duties to protect such a race of ornamental do-nothings, or to enable the solid, energetic and sober workingman to earn a living wage of less than six dollars a week, which is about the average of woolen employees in Canada, and may be not quite that amount?

This is one of the causes of the diminution of profits amongst the woolen industries. The reverse of this condition of things in a few woolen mills proves the truth of my contention. A ten-sett mill, where the owner manages and has a bookkeeper at for about $400 a year, and, if my information is correct, who has not reduced his workpeople but very little indeed, makes money, and the employees are a contented lot of people and work truly and earnestly for their master's interest. In another woolen factory — a five-sett mill — the manager and superintendent take $1,300 and bookkeeper $300, or $1,600; in another woolen factory — four-setts — $1,000 is paid the manager and bookkeeper $400. These concerns have had profit margins during the last six years, and always keep ahead in the race of competition. They have kept up to the demands of the trade successfully, and competed with foreign goods, particularly English. I could go on mentioning concerns where good management is the order of the day, and the managers keep up to the times, but they have no heavily paid do-nothings of managing directors to bleed the margins of profits every year.

Woolen mills, to be paying concerns, must not have gentlemanly ideas of the necessity for managing directors or secretaries at high salary, when the same work can be as efficiently done for one and a half dollars and two dollars a day. Useless ornaments cannot be paid for out of profits that are made by our woolen mills in these times of severe competition. A very striking instance of this exorbitant managerial, office and travelling expenses has only very lately been given. A syndicate in the hardware trade has lately gone voluntarily into liquidation, because when the president examined the yearly returns, he found that the office, managing director, and travelling salesmen's expenses came to more than the workmen and foremen's wages at the factory. So he at once determined upon liquidation to save what capital was left and to pay the creditors in full.

The Grand Trunk Railway, under the new chairmanship of Sir Charles Rivers Wilson, has employed a new manager, C. M. Hays, from across the lines. Mr. Hays has been making things lively since his appointment. I hear that he has replaced old employees with new men, and disbanded and discontinued offices and clerks that will be a saving in expenses alone of over $500,000 a year. At the head offices in Montreal he laid off 17 clerks of different ranks; that made a saving of $20,000 a year, and with increased efficiency too. The section men on the permanent way have had their wages increased since Mr. Hays became general manager. He is on the proper line of economy. Let our woolen mill syndicates do likewise, and then they can replace their already out-of-date machinery (which I intend to touch upon in another letter) with the saving in the salaries of the overpaid officials, who are heads of the ruling board of management, and who do not add to the profit-making of the industries they pretend to supervise.

The need for reduction on account of reduced incomes is being felt by our religious and charitable institutions as well. All branches of business are affected by the hard times. It is not confined to the woolen trade alone. The past two years has seen Methodist and Episcopalian churches show yearly re-

ports of very much reduced incomes, their congregations having cut off largely in their contributions to the various funds. The Episcopalians' church fund for annuities to old ministers is not now able to pay the annuities to the worn-out and aged ministers as formerly, on that account. This is a sad feature of the hard period of depression. Also many of the ministers in diocesan churches have had salaries reduced. The same has been done by many of the Toronto Methodist churches. One Methodist church in the very centre of the city, with a seating capacity of nearly 2,000, which is well filled every Sunday evening, actually at some of their offertories do not get a half cent a head. The minister is every Sunday very outspoken too, asking for a five-cent collection every month. The people either have not got the money or else it is a strong reflection upon the meanness of any one to occupy a seat regularly Sunday after Sunday, and refuse to contribute even to the stipend of the minister, who has actually to beg after his sermon for each of the congregation to put in a five-cent piece. His appeal has very little effect usually upon his hard-fisted hearers. These are curious signs of the times, when our religious mentors are to be starved out and our religious church members sit in their pews with ears stopped to such direct appeals. But what has that to do with the woolen industries? It shows another instance of the hard times we have been undergoing and of the economy that has to be enforced by deacons, church wardens and church managers to make income and expenditure equalize each other.

THE PATON MANUFACTURING COMPANY, SHERBROOKE, QUEBEC.

The following description of the well known establishment of the Paton Manufacturing Company, Sherbrooke, is quoted from a recent issue of the Sherbrooke *News-Letter*:—

"The works of the Paton Manufacturing Company are situated near the river Magog, in the upper town of Sherbrooke. They are the largest woolen and worsted mills in the Dominion, and give constant employment to 750 operatives—men, women and young people—who receive yearly in wages above $160,000. In addition to this large amount, immense sums are disbursed for supplies, repairs, etc. Their stoppage, or shut down, even for a week or two, would mean acute distress in many families, and would be felt all over the district; for pay-day at the Paton Factory makes a great difference in the market; not to mention the dependence on it of storekeepers for the payment of their accounts. It is the main industry of Sherbrooke, and its location here is due to the skill and ability of one man, now deceased, whose services in various ways to promote the welfare of the citizens, won for him high respect while living, and ensure for his memory warm feelings of regard in the minds of thousands.

"Andrew Paton was born at Tillicoultry, near Sterling, Scotland, on the 5th of April, 1833. He served an apprenticeship with the well known manufacturing firm of J. & D. Paton of his native town. Although bearing the same name, the families were not related. He emigrated to this country in 1855, and embarked in business in the town of Galt, where he soon made a name for himself as a straightforward man and a skilful manufacturer. After about six years he removed to Waterloo, Ont., where he commenced business with Mr. Bricker, the name of the firm being Paton & Bricker.

"In 1866 he established a woolen mill in Sherbrooke, and commenced business here under the name of A. Paton & Co. His business capacity and sterling worth were recognized by R. W. Heneker, Esq., who took a warm interest in his plans and induced others to do so. They obtained the co-operation of George Stephen, Esq. (now Lord Mount Stephen), of the late Hon. John Henry Pope, and the late Benjamin Pomeroy, Esq., and in 1868 the private adventure of Mr. Paton was converted into a joint stock company, called the Paton Manufacturing Company.

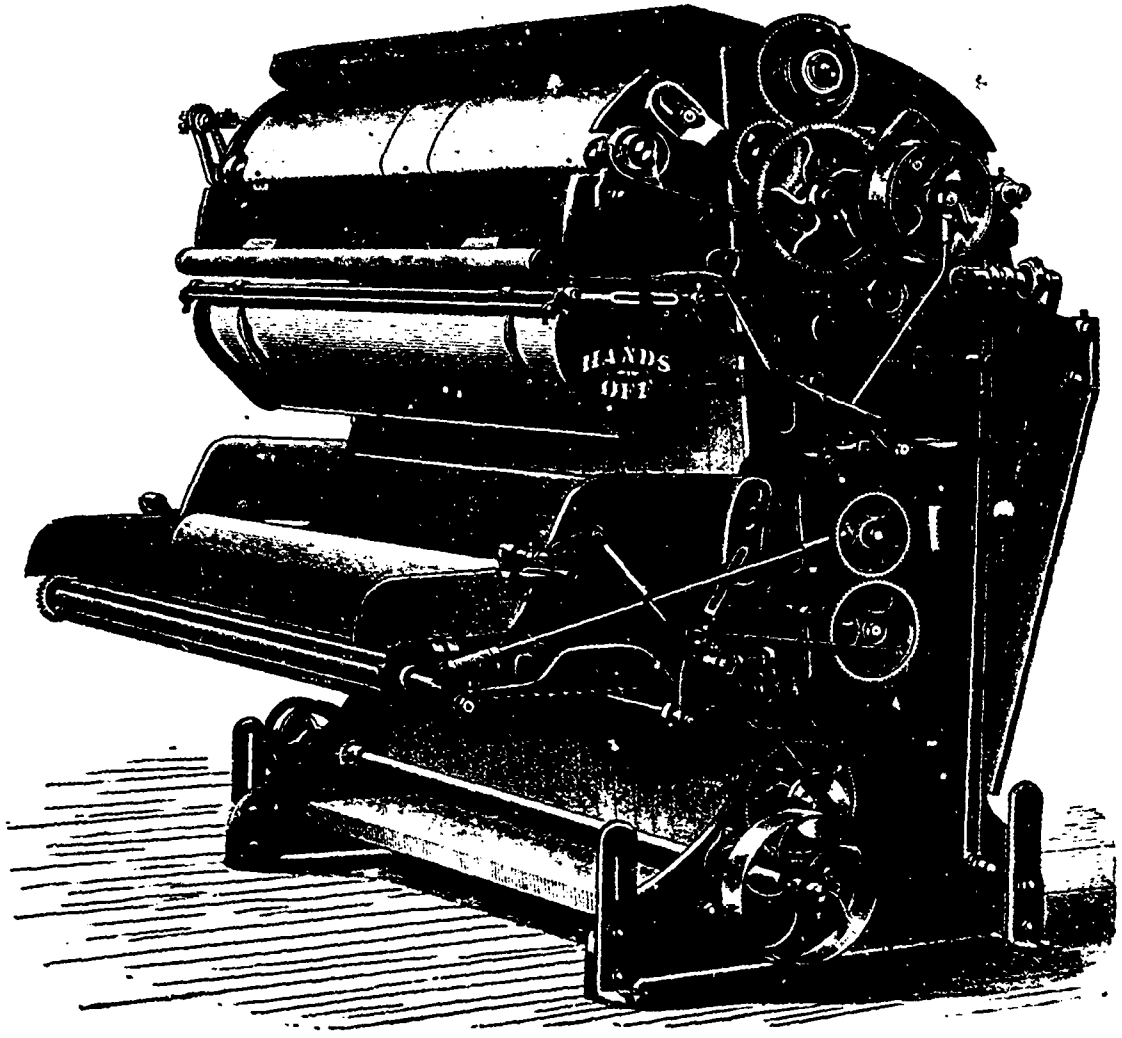
"The mill, soon afterwards, had ten sets of machinery, which were increased in 1872 to twenty, and subsequently to twenty-two. The mills comprised two main brick buildings, one 212 feet by 56 feet, the other 164 feet by 56 feet, each four stories in height; scouring house, repair shop, store-house, 84 feet by 104 feet, two stories high, boiler house, gas house, tank house, picker house, scouring and drying house, dye house, stables, sheds, offices, etc., the whole covering about eight acres of ground. In 1892 another brick building was added, 208 feet by 58 feet, four stories in height, for the manufacture of worsted goods, the plant and machinery having been transferred from works in Quebec. The motive power is water, from the river Magog. The heating is by steam, furnished by six large boilers, which also supply the dye house. Mr. Paton was very particular in adopting every precaution against fire, and these mills, in addition to the safety furnished by our excellent fire brigade, are provided with automatic sprinklers, from which the water is set free by a sufficient rise in temperature to fuse caps, placed every ten feet throughout the buildings. There are also numerous hydrants in the mills and yards, supplied by force pumps, with water from the Magog river, and an arrangement is made with the firm of A. Lomas & Son, who have a woolen factory close by, whereby mutual precautions are taken and joint assistance can be rendered should an outbreak of fire occur.

"The goods manufactured at these mills consist of tweeds, military clothes, cloth for rubber overshoes, worsted of all kinds, rugs, shawls, dress goods, flannels, woolen and worsted yarns, etc., etc. Their superior quality is recognized in the United States as well as in the Dominion, for large quantities are exported there. It is not within the scope of this article to describe the process of manufacture. In fact, in a woolen or worsted mill the operations are so many and diverse that it would not be possible in the limited space at command to do more than allude to them. THE CANADIAN JOURNAL OF FABRICS, the best trade journal of its kind in the Dominion, is publishing a series of articles, extending over several months, on 'Worsted from the Fleece to the Cloth.' It says 'the worsted industry is distinct from the woolen, although the two are often confused, for the reason that similar processes and machinery are employed in each. So far as published the writer of these articles gives brief notices of the operations of washing, cleansing, drying, picking, carding, backwashing, gilling, balling, drawing, spinning, spooling, dressing, weaving, etc. The list is not complete; dyeing, finishing, are not even mentioned yet; but it will be seen even from this partial enumeration that woolen and worsted mills really embrace a variety of trades, requiring skilled operatives in each, the workmen in one of them not being necessarily master of the other trades.

"The Paton Mills, then, are a group of factories dependent on each other, and all under one management. The skill required in the organization of such a complex industry must have been immense, especially in Canada, at a time when the appliances to be found in the Old Country were not at hand. They have acquired a world wide reputation and the excellence of their products is recognized everywhere. Andrew Paton died suddenly on Sunday, October 23rd, 1892, aged 59 years. The expressions of regret were universal and sincere; for his character and kind gentlemanly disposition displayed in every action, had won for him a high place in the affections of the people. His labors were finished, but the chief public work of his life will continue to endure, and is ably carried on under the present management, the chief officers being R. W. Heneker, president; M. H. Cochrane, vice-president; John Turnbull, managing director; E. Hargrave, secretary; W. E. Paton, manager."

THE BRAMWELL FEED.

At the first glance at the illustration on this page the machine will be readily recognized as the celebrated Bramwell first breaker feed for woolen, worsted, shoddy and hosiery cards. It is worthy of a closer view, however, as it shows recent improvements that are here illustrated for the first time in any textile journal in Canada. The principle of the Bramwell Feeder is too well understood by all manufacturers and users to need any extended explanation. Under the control of George S. Harwood & Son, of 7 Water st., Boston, Mass., about 9,000 machines have been introduced, and the builders



make the claim that since January 1st, 1894, over 98 per cent. of all the new cards started in this country and the United States have had their Bramwell and Apperly Feeds on them This seems like a broad claim, but from the number of mills where these machines are seen, it seems none too broad Geo. S. Harwood & Son now build the Bramwell Feeder for special work, like feeding Garnett machines, shoddy cards, and they are also building a very much improved machine for feeding worsted, wet or dry. In fact the illustration on this page is the worsted machine. It is well known that there are a large number of Bramwell Feeders in Canada, and some of them may need repairs The builders are making a special department for repair orders, and all the new improvements and attachments can be placed on the oldest machines, thus bringing them up to date. Besides the Bramwell Feeder for cards, Geo. S. Harwood & Son are now building from new and improved patterns, feeders for feeding burr pickers, mixing pickers, Fearnoughts, willows, lumpers, and dusters. Their new and improved high-frame machine for feeding large quantities to Fearnoughts and mixing pickers, has been a distinct success in the United States. The builders say that these machines are feeding from 1,000 to 1,600 lbs. per hour to 40 and 48 mixing pickers, and doing the work well without crowding. This machine is evidently in a class by itself. It is taken for granted that our readers know all about the Apperly Feed, also built by Geo. S. Harwood & Son This machine is more popular than ever, a fact well attested by the large number of orders for them filled during the past two years. It seems to be a fact that while the Apperly Feed has its faults, it has steadily overcome the prejudice of carders and superintendents, and is to-day claimed to be the simplest, cheapest, and most efficient intermediate feed in the world. Many improvements have been made on this machine. Information in reference to feeding machinery, and recent improvements, may be had by addressing the builders, Geo. S. Harwood & Son, 7 Water st., Boston, Mass.

HISTORY OF THE READY-MADE CLOTHING TRADE.

(Continued.)

We have given our readers some clue to the rapid strides which have been made during the century, and those preceding it, in those kindred arts, manufactures and inventions which heralded the approach of an era for the dress of mankind such as would have been deemed altogether Utopian by our ancestry. It now remains for us to trace the development of the ready-made trade from its commencement in the metropolis to the present time. As there are now over one hundred large wholesale firms, employing upwards of forty thousand workpeople, besides a large number of smaller ones, and a great army who are employed in the retail branches of the trade,

the progress and present position of so important a branch of commerce should be of interest to all who are engaged in it.

Although there are no climatic or aquatic surroundings necessary for the establishment of a clothing factory, as in the woolen cloth manufacturing, and there is nothing but the ab ence of labor to prevent any large town becoming a market for the trade, yet there is no denying the fact that the tendency of late years has been to centralize Still there are not only large houses now in London and Leeds, but the following towns are more or less important centres of the trade

Abingdon, Berks.	Hebden Bridge.	Norwich
Barnsley	Huddersfield.	Nottingham.
Bury St. Edmunds.	Ipswich	Oxford.
Birmingham	Kettering.	Stockport.
Bristol	Leicester.	Stroud.
Colchester	Liverpool.	Tamworth.
Crewe	Limerick.	Todmorden
Dudley	Manchester.	Walsall.
Derby	Nantwich.	Wigan.
Glasgow.	Newcastle-under-Lyne.	Wigton, Cumberland
Haverhill.		Yarmouth.

As, however, in this trade, as in most others, the metropolis has been the mother of us all, we must give the first place to some account of its rise and progress there

There is every reason to believe that the clothing trade in all its branches of "old clo, re-mades, and ready-mades, is of Semitic origin And there is nothing discreditable in this to the shrewd people who, as early as the year 730, found their way to the shores of old England, and brought with them not only the wealth they had acquired in other lands, but the knowledge of many sciences and arts which were but imperfectly understood by our grim and warlike ancestry. They increased after the Conquest; but it was not until after the rapacious days of Stephen, when Henry II had given some degree of security to congregated communities, that they became numerous and wealthy. In those days the Jews were the most active and enterprising traders at the fairs, which were held in various parts of the kingdom, and at which most of the trade of the nation was carried on. Then, as now, their favorite commodities were plate, jewels, armor, cloth, wines, spices, horses, cattle, etc They took their place amongst the most important of those "merchant strangers" who had settled in England for purposes of commerce, and amongst whom were the German merchants of the steelyard, the Lombards, the Merchants of the Staple, and others. These were all corporations, with great privileges, in which the Jews shared, even establishing themselves in their "Jewries" Their first synagogue, which is said to have been demolished in the year 1263 by the citizens, after 700 Jews had been slain, was situated in what is now known as the Old Jewry in the City. Then followed the continued maltreatment and persecution of that cruel Jews'dentist, King John, in spite of which the patient race continued to make money and to gain prestige. In the reign of Edward I., although at first the monarch refused to heed the petition of the citizens of London to expatriate these merchant strangers, he afterwards acceded to their wishes, and in the year 1290, by his decree, it is said that 16,000 Jews were banished from the kingdom In the time of Cromwell, an Amsterdam Jew, Rabbi Manasseh Ben-Israel, personally waited on the Protector to seek the re-admission of his countrymen into the kingdom. Cromwell evinced his personal desire for their return, but wavered in his consent in consequence of the opposition of many of his co-religionists. Notwithstanding the absence of this sanction, however, small numbers of the Jews kept finding their way hither during his protectorate, until, at the restoration in 1660, they proved themselves useful to the money-borrowing Charles II., and settled again in considerable numbers.

At the beginning of the last century the street Jew must have been a constantly recurring figure, and "old clo," a familiar cry for Tempest's "Cries of London," gives a full description of these singular people, with three cocked hats upon their heads, a muff in one hand and two dress swords in the other, their apparel full skirted, and their long hair descending to their shoulders, vending their wares persistently and successfully, in spite of the curses of their enemies and the bantering of their friends. Such was the continued antipathy, however, manifested by the English mob towards them, that in 1754 the Houses of Parliament repealed an Act which had been passed previously, to enable Jews to be naturalized without being required to take the sacrament. But, thanks mainly to the influence of their influential and wealthy families, such as the Rothschilds, Sir Moses Montefiore, and most of all, probably, their great representative, Lord Beaconsfield, the Jews have remained an important and growing integral part of the British nation, and especially of that branch of it in which these papers are most interested, viz., the clothiers and their employees. In the year 1861 the neighborhoods of Whitechapel, Houndsditch, Bevis Marks, and the surrounding streets displayed every indication of their Semitic proclivities, for here Abrahams, and Isaacs, and Jacobs, and Josephs, with their numerous progeny, largely monopolized those profitable industries which give the maximum of profit to the minimum of labor. Watches, jewels, sponges, fruits, shells, tortoises, parrots and foreign birds, curiosities, ostrich feathers, snuffs, cigars, pipes, and last, but not least, old clo' and new clo', hats and caps, furs—all these trades were at this time mainly in the hands of the Jews.

The introduction of the sewing machine probably benefited the working Jews more than any other part of the operative class. In the report of the Jewish Board of Guardians for 1863 there is a most interesting account given of the manner in which this excellent institution had utilized the newly applied discovery for the benefit of their semi-pauperized fellow countrymen and women, and its extraordinary effect upon the poor people themselves. After the first £500 had been laid out in the purchase of sewing machines, the following amongst others were reported to the board as having derived great advantage from the use of the machine. The numbers given are those prefixed to the cases in the report.

"No. 2. Tailor in full work, and employs several hands. 16. Flannel shirt maker. An unmarried woman, who supports a father and two sisters by her individual industry. This, she states, would be impossible without the aid of the machine. The family were existing in the most wretched state of starvation previously to the loan being granted. 17 and 18. Tailors. Both doing well, and state that but for the possession of a machine, they and their families would have been entirely destitute. 19. Tailor. Plenty of work. Has been doing well during the summer. 20. Tailor. Plenty of work. Expresses his profoundest gratitude for the loan of the machine, without which aid, he says, he must have starved. 22. Cap maker. Doing well. 24. Tailor. States that previously to getting the machine his weekly wages never exceeded 30s., whilst they now averaged £3 10s. 25 and 26. Tailors. Doing well. 29. Tailor. Doing well. 30. Tailor. Formerly earned 35s. weekly. Since having the machine has more than doubled his earnings, and thereby been enabled to pay off old debts, and to clothe his family respectably. 31. Tailor. Consumptive. Wife works the machine. Occasionally out of work, but nevertheless earns a fair living. 32. Tailor. Was a journeyman earning about 24s. per week. Now employs three assistants and has a comfortable home. 33 Tailor. Previous to having the sewing machine was in great distress, and compelled to live in a wretched room in one of the lowest neighborhoods. Is now a householder, and living in comfort and decency. 38. Tailor. Has plenty of work and makes an excellent living. Saves money."

The operations of the Jewish Board of Guardians in thus aiding their poorer brethren rather by loans than gifts or doles, are of deep import to all workers amongst the poor, especially when it is considered that since 1863 they have found it advisable to extend their help in this direction. And, although increased competition, and the continued influx of Jewish immigrants, has reduced wag s in some departments, yet my readers will see by careful attention to the figures given in ensuing chapters that, at the present time, the average wages paid in the clothing trade will compare favorably with those of any other textile industry in existence.

A TRIP THROUGH THE SAXON HOSIERY DISTRICT.

(Continued.)

Leaving Chemnitz at its western extremity, we immediately enter a series of villages, which may be looked upon as a continuation of the town. First comes Kappel, then Schonau and Neustadt. The chief articles produced here are bathing drawers and suits, and low cut hosiery for South America and the West Indies. The combinations of colors in the latter are often very startling, navy, cardinal, royal blue, yellow, and bright grenat being indiscriminately mixed. The application of honey-combed and pressed patterns renders the effects still more complex. The amount of cheap bathing drawers turned out in these villages is enormous. They are nearly all delivered to the large Chemnitz houses, very few being made anywhere else in Saxony. There are over twenty concerns making bathing drawers and hosiery, and about ten for producing *tricot* cloth, which is largely used for ladies' jerseys. There are few factories in this district, the industry being chiefly carried on in the homes of the people, and in small tenanted workshops. In these villages, too, most of the fleecing of hose and half-hose is done. Brushing machines are not employed for this purpose, it being all done by hand with teasels. The stocking is soaked in soap and water, brushed on the wrong side, then sent to dye, and brushed up again in the same way before finishing.

About seven miles from Chemnitz, in the same direction, lies Gruna, a place of importance in the glove trade. There are about a dozen concerns here making cotton, lisle, plated, and silk gloves, with fashioned hands, cut fingers with one seam, and fashioned finger-tips; a few low lines are made with the tips only sewn together, but the demand for these clumsy goods is rapidly declining. Lisles predominate in numbers of 50/2 and 60/2, and even 70/2, and the corresponding numbers in four threads, and silk. Many beautiful designs of lace armlets are shown, and have been very popular in the past season, especially in the United States. One of the oldest bleaching establishments in the Kingdom stands here. It first introduced the English system of finishing Balbriggan hosiery. Under the pressure of fast blacks, however, bleachers have difficulty in keeping their concerns going.

Continuing in the same direction, with an inclination to the south, an hour's walk brings us to the town of Hohenstein, prominent for its manufactures, and as a bathing place. There are about ten factories here, employed on best silk and plated hosiery. Very elaborate fancies are also turned out. The plated goods are made in great variety, with cotton and lisle backs. Plain stockings, or such with colored tops or colored boots, are elaborated with every imaginable style of drop-stitches, worked throughout, or in boot only. By plating different shades on each other exquisite shot effects are obtained. Frequently, too, fine embroidery made by the machine is inserted between the open-work. This, however, is not so neat as hand embroidery, the figures having too stiff an appearance. There are here also two concerns making underwear of a fine grade, and several factories for other kinds of goods not within our province.

Two miles due south of Hohenstein, the village Oberlungwitz stretches along a road of about eight miles in length. It has about twenty glove factors, and a dozen establishments for hosiery, chiefly supplied by the house industry. Nearly all the goods here produced are sent to Chemnitz. This village is the principal seat of striped half-hose, with English and French feet, all full-fashioned, 27 and 33 gauge. The goods are made in two, three, and four-end patterns, chiefly from 1/12 and 2/22 cotton on the coarse gauge, and 2/36 cotton, 2/40, 70, and 80 lisle on the fine gauge. The 27 gauge half-hose are now made at absurdly low prices; a nice-looking sock, three-end, gusseted, can be got by Chemnitz houses for 1s. wages, and out of this the factor has to get his expenses and profit. A considerable quantity of low plated hose, with cotton and lisle backs, is made here, but only quite plain. A nice little trade is also done in expensive striped cotton lisle and cashmere half-hose for the German market. The glove styles made in this village are much the same as those in Gruna. The west end of Oberlungwitz joins on to the little village Gersdorf, where there are six concerns. One is now doing a direct export trade. The hosiery industry does not thrive very well here, owing to the proximity of the coal mines, which detract the working powers. The mining district extends to the south-east, with Lugau and Oelsnitz as main centres, about an hour's walk from Gersdorf.—*Knitting Circular.*

ELECTROLYTIC BLEACHING.

For bleaching purposes an effort has been made for some years to replace chloride of lime by chlorides obtained by the action of the electric current on chlorides of the alkalies or the alkaline earths in aqueous solution. Hermite uses in this way a solution of magnesium chloride to which sea-salt is added. Gebauer and Knœffler leave out the chloride of magnesium in the preceding method, and simply run the electric current through a bath of chloride of sodium. Saget has been making experiments with a view of testing the action of these two liquors on cellulose, and reports the results of his experiments in the current *Moniteur Scientifique*. It is claimed for the Hermite process that no oxy-cellulose forms in the bath they use. The German firm say that as there are neither salts of lime nor of magnesium used in the process, the stains on textile fabrics which these salts cause cannot occur. Saget notes that these liquors must be used with as many precautions as chloride of lime, and that under certain circumstances, the electrolyzed liquids are more dangerous than bleaching solutions of hypochlorite. His experiments were of two descriptions. In the first he immersed the goods totally in the bleaching liquor in full daylight, in the second series of experiments he gave only partial immersion in the shade, the liquor running through the fibres of the tissue by capillary attraction. The three solutions contained the same amount of chlorine, so that a satisfactory comparison could be made In the first series of experiments, giving a total immersion in full daylight, he reports that the Gebauer liquor, containing less than 0.25 grammes per litre of chlorine, does not produce any oxy-cellulose. This proportion falls to 0 20 grammes per litre for the Hermite liquor and rises to 0.54 for the chloride of lime bath In the sun, therefore, the action of either of the two electrolyzed liquids is more energetic than that of chloride of lime. In the second series of experiments, that is to say, partial immersion in the shade, the chloride of lime bath proved the most active. Below 0.30 grammes of active chlorine per litre, the chloride of lime still produced oxy-cellulose, whereas at this degree of condensation neither of the two electrolyzed liquors gave it. At this step Saget wished to know whether there was no free chlorine in the electrolyzed liquors, and therefore tried the action of chlorine water on the cotton fibre.

The chlorine with a partial immersion in the shade gave no trace of oxy-cellulose, even at a concentration of two grammes per litre. On the other hand, exposed to the sun the chlorine energetically attacked the cellulose, and this attack was produced when the concentration fell to below 0.25 grammes per litre. He then prepared two solutions of hypochlorite of magnesium; the one by double decomposition between sulphate of magnesium and hypochlorite of lime; the other by the action of a current of chlorine on magnesia in suspension in water. These two solutions were tried comparatively with the Hermite liquor and with the solution of hypochlorite of lime The result of these experiments showed that the Hermite solution approached very nearly that of the reagent obtained by the action of the current of chlorine on magnesia. Below 0.30 grammes of active chlorine per litre, neither solutions produced any oxy-cellulose in partial immersion in the shade In the sun the concentration of the baths had to be lowered to 0.20 grammes before the production of oxy-cellulose ceased. On the other hand, chloride of magnesium produced by double decomposition was exactly similar in its action to chloride of lime. In comparing the Hermite and the Gebauer and Knœffler solutions, it was found that the first was more active than the second. In fact, in partial immersion in the shade the Gebauer liquor containing 0.52 grammes of active chlorine per litre gave feeble traces of oxy-cellulose, whereas the proportion of oxy-cellulose formed is very great when a Hermite solution of this concentration is used. This superiority of the Hermite liquor over that of the German firm is, in Saget's opinion,

due in some measure to the stability of the hypochlorite of magnesium Possibly, he thinks, during the electrolysis a salt of peroxide of magnesium is produced, which would be much more active as a bleaching agent than the salt of the protoxide There is nothing surprising in the discovery that in the partial immersions in the shade it is the solutions of chloride of lime which give the most oxy-cellulose. We know that in the presence of alkalies cellulose easily oxidizes, and the formation of this oxy-cellulose must be attributed to the presence of free lime in the chloride of lime. It is the same in the case of the solution of hypochlorite of magnesium prepared by a double decomposition This contains a free alkali, either magnesia or lime From the point of view of bleaching action he sums up the Hermite solution as the most active, then that of Gebauer, and last of all, the chloride of lime Very fine and pure whites can be obtained with the Hermite liquor containing no more than 0 03 grammes of active chlorine per litre, whereas with chloride of lime the concentration must be almost double this With an equal strength in chlorine this solution is harmless to the cotton fibre, and there is no danger of producing oxy-cellulose when the bath is sheltered from the rays of the sun

TECHNICAL EDUCATION IN THE UNITED STATES.

BY E W FRANCE, PHILADELPHIA.*

This address was delivered at the annual meeting of the New England Cotton Manufacturers' Association, held in Boston recently, and is taken from the report in the New York *Dry Goods Economist:*

Never in the history of textile manufacturing in this country has technical education been more generally or more earnestly discussed than at the present time, and never has there been such a need for superior intelligence and artistic skill in our labor.

The query naturally arises, What has been the cause of all this discussion? The question can, I think, be truthfully answered by saying that it was brought about not only by the decay of the apprenticeship system, but also by the constantly increasing demand for higher classes of production coupled with the growing pressure of international competition under the new industrial conditions which the factory system has fastened upon modern civilization

Much has been said concerning the decay of the apprenticeship system. By many it is seriously regretted. It must be remembered, however, that there was a dark side to the apprenticeship system Employers were not always regardful of the interests of their apprentices and many a bitter tale has been told of their experiences. If, therefore, the advantages of this system have passed away, with the changes that have come over the industrial world, let us not forget the evils accompanying it have also disappeared

The fact that machinery performs such a large part in modern industry has brought about a condition wherein the boy goes into the factory and learns merely to manipulate certain machines. The result of this contracted scheme is death to originality or artistic cleverness in the workman and true æsthetic quality in the production. On the other hand, owing to the great and growing demand for the newest and best productions that can be created in many branches of art industries, and especially among those on whom devolve the duties of supervision and direction, the standards of qualification are being raised. Moreover, an awakened sense of responsibility for the quality of the productions of industrial communities has transferred much of the discussion regarding these matters from the field of private affairs to that of public concerns, until it has become in a sense everybody's business to promote in all legitimate ways the prosperity of the community and the efficiency of its members

Of the agencies that have come to be relied upon to serve this public purpose, industrial education is undoubtedly the one which has claimed first place and which deserves the most serious consideration. The people of America, even the great manufacturers themselves, are learning more or less rapidly that industries that have been protected by the tariff only are only half protected, and that in numberless instances they are not protected at all, because no matter how high the price may be made by the tariff, the consumers will continue to pay it if the imported wares are really better than the home product.

The foundation for such a training should be laid broad and deep, and I would therefore build it upon the basis of higher education, believing as I do that the very best talent that we can bring to our aid is none too good for the textile industry of this country. One of the serious mistakes of our higher education has been that it has not had coupled with it some form of manual employment. There has been a great unwillingness on the part of those who graduate from our high schools to become textile workers, whereas if they had never pursued their education in such institutions and had gone into the factory, they would doubtless have gotten on better.

Unless the boy has been trained to grasp the importance of such subjects as the economic uses of steam, mill equipment, fire prevention, transmission of power, electrical engineering, and many other similar matters of equal importance to the successful manufacturer of to-day, his education is just so far deficient, and when the day comes for him to take the direction of the craftsman he will ofttimes attempt to introduce economies at the wrong end, if he attempts them at all.

I do not deny that there are men who have become very wealthy, and who have never had the advantages of such an education. Some of these men to-day take the position that as they were successful it is not necessary to educate our rising generation in any other way than that in which they were brought up. I wonder if it has ever occurred to such men that times and conditions have changed, and that the requirements of the hour are far different. Were they perhaps to start to-day under the same circumstances, they would become dismal failures.

The textile industry of the United States has reached enormous proportions, and it is still growing. I believe we can point with pride to the fact that we have some of the largest and best mills in the world. The equipment of some of our modern mills has, perhaps, no superior in any land. All the world long ago gave us credit for our great ingenuity in machinery construction, but having said this, I am also forced to admit that the productions from this machinery are sadly deficient in an artistic sense, in design, color and finish.

It was my good fortune a few years ago to make quite an extended tour through Europe. I found that the system of technical education in vogue was everywhere eminently and practically outspoken in its aim. Technical and trade schools abounded on all sides, of all kinds and methods. Trade education has taken a deeper and firmer root in the great industrial centres of the Continent than we on this side of the Atlantic would commonly realize. Indeed there are special schools for the teaching of everything, from the making of shoes and training of house servants to the making of the highest classes of textiles.

France is undoubtedly ahead of all Europe in its generous provision for popular, higher, special and technical education. It may also be said that she was the first country that earnestly set herself to extend the advantages of such instruction to the masses of the people.

In Germany, the schools are hardly less conspicuous as a part of the machinery of the Government than the army itself, and this is saying a good deal. The purely textile schools of Germany are among the best of their kind in the world. The Government weaving school of Crefeld is about the foremost. A manufacturer from Saxony said only a short time ago: "Let the Government take its hand from behind the trade schools and we manufacturers would support them ourselves. They are indispensable in helping us to keep what we have and enabling us to go out and get more." What is true of Germany is true of Austria, of Switzerland, Belgium and England

The need for similar instruction in this country became very apparent to some of our more progressive manufacturers of Philadelphia as far back as 1875, or about the time of the advent of the

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then new worsted fabric which was being introduced into this country, and which brought into activity a new element of design and workmanship. They saw there was a lack of skill to properly handle this branch of the industry, not only the skill in the making of the goods alone, bnt the skill in the bringing out of the design, the dyeing and in the finishing.

To this end the manufacturers formed themselves into an association to be known as the Philadelphia Textile Association. Its members represented the progressive element of the manufacturing community of Philadelphia and vicinity.

The sum of $50,000 was fixed upon as the minimum amount, and the association endeavored to obtain this sum from the manufacturers of Philadelphia by subscription, but, as with every charitable enterprise, a few leading men and firms bore the burden of the work. The sum was never reached, and the whole enterprise seemed likely to be abandoned, when Theodore C. Search, then president of the association, concluded to assume the responsibility. This project was made known to the trustees of the Pennsylvania Museum and School of Industrial Art, and rooms were placed at the disposal of the new school. Teachers were engaged and a night class of enthusiastic students organized in 1884-85.

At the meeting of the Philadelphia Textile Association held some time later the subject was again discussed, and the association decided that it would be wise to sustain the enterprise and recommend the subscribers to the before-mentioned fund to turn over the amount of their subscriptions to its use. This was done, and nearly $30,000 was transferred in this way. Mr. Search assumed from the very first the entire responsibility of organizing and equipping the Textile School, and to his devoted and untiring service on its behalf from its first inception to its present high state of development, more than all other agencies combined, its success is due.

From the small beginning of 1884 the school has grown by steady additions, slowly but surely, to such proportions that the 40,000 square feet of floor space which it now occupies are hardly adequate to accommodate its needs. In the matter of machinery and other essentials the school has, through the generosity of manufacturers, managed to keep pace with the growth of its surroundings. Its equipment comprises over 60 hand and 22 power looms, two sets of cards and one mule, one willow, two pickers, and fulling and gig and shear and other machinery for finishing, winding, twisting, card cutting, and so forth. Four well-lighted rooms are set apart for work in color harmony, jacquard sketching, mechanical drawing, fabric structure and fabric analysis, as well as for miscellaneous lectures. The work in chemistry and dyeing is carried on in four communicating rooms, which contain desks and chemical apparatus, soap kettles, dyeing and scouring vats, hydro-extractors and a dyer.

The four weave rooms have a combined floor space of 8,000 square feet, and are filled with the latest product of the loom builder's art. No other institution in the world can show the variety of up-to-date machinery to be seen at this school.

Our wool preparing, carding and spinning plant is quite as complete as regards the equipment as the power weaving just mentioned. It allows us to begin with the raw materials, cleanse, blend and thoroughly mix our wools preparatory to carding, then card and spin them to the various sizes required. Coupled with the actual practice on these machines the students are taught the uses and abuses of the various kinds of card clothing, the relations of one cylinder to another, how to set and tie the various parts, the calculations of the speeds, the different rubbing motions; in fact, all the peculiar and necessary information which goes to make up the knowledge of a successful carder. And further, each student, through the aid of chemistry, is taught the chemical formation of the fibre itself and the action of the various alkalies and cleansing materials upon it. What applied to the carding equally applied to the spinning. The result of this is that they have a comprehensive view of manufacturing in general. They are always prepared to meet the demands of the market.

The chemistry of dyeing and the actual dyeing of yarns and fabrics form another branch of the course, which, coupled with the study of color harmony, makes one of the most important departments of our school. I believe it is along the line of skillful dyers and colorists that we are the most lacking in this country, and I am persuaded that the large sales of foreign productions in this country are influenced as much by good, bright and even colors as by the design and finish. The Textile School has, therefore, made this one of the leading features of its work, and the result has justified the time, labor and money spent in perfecting this department.

The curriculum of the school is made as broad as possible Not only are our pupils made familiar with one branch of manufacture, but many branches. The instruction in fabric structure and analysis, including the necessary and most approved methods of calculation covers all kinds and styles of fabrics—cotton, woolen, silk and union fabrics, in all their forms and varieties. It is my firm belief, therefore, that herein lies the success of our school, and I am fully convinced that three years spent in the Philadelphia Textile School is more than equivalent to twice that time in the best mills in this country.

Experience has taught us that not one pupil in ten eventually follows the particular line of textile work that he thought he would when he entered the school. Indeed, I could mention more than one who have become dyers whose original idea was to have been designers, it having been found through the school to be more congenial to their taste. I am aware of the great influence of design upon the sale of textile materials I am also aware of the necessity of good dyeing and finishing; but I am equally persuaded that a knowledge and correct use of the raw materials has as much to do with happy results as either of the foregoing. Here again the school is particularly fortunate, for gathered in the class-room and in its valuable museum at Fairmount Park are specimens of raw materials of cotton, wool and silk from the world over

TO PREVENT SPOTTING IN FABRICS.

Rapetout, a French chemist, has just devised a process of impregnating textile materials, whether in the hank or piece, which is said to render them resistant to the penetration or fixation upon them of all matters coming into contact with them after they are prepared by the new process. The materials, whether in the piece or in hanks, are subjected to a preliminary washing, to cleanse them of all foreign materials which may have been brought into contact with them by previous manipulations, and they are then subjected to the action of the following baths whilst still in the damp state, for the purpose of rendering them resistant to spots. The first bath is composed as follows:—

Water 100 litres, alum 3 kilos., carbonate of soda 800 grms The precipitate which is formed is allowed to settle, then the clear liquid is decanted and warmed, and into this the goods are plunged for the mordanting After the goods are well soaked they are pressed through a wringer and then plunged in a solution of acetate of alumina of 5°. This reagent is designed to set the alumina free and fix it upon the fibres. The fixation is immediate in this second bath, from which the precipitate which accumulates after several operations must be removed. The material is then wrung out, rinsed and dried. In operating upon silk and cotton by means of the process described, there should be added to the solution of acetate of alumina 30 grms of Marseilles soap per litre, and with respect to silk more particularly it must be treated in a bath of acetic acid of 7° diluted in the proportion of 10 grms. per litre of water, and then finished as above described. The treatment above described has various other advantageous effects upon the materials besides that of rendering them refractory to spots, and far from removing them from their qualities, it renders cotton softer to the touch, and it preserves to the silk its rustling effect. This process is said to give a greater stability to the colors, rendering less dangerous subsequent soaping and cleaning of the goods, such as clothing, hangings, carpets, etc., without risk of damage to the colors, so that this treatment can with advantage be employed to replace other expensive baths now in use to secure similar advantages. The new process has, moreover, the result of rendering the materials incapable of shrinking, so that, especially in the case of light materials, these

retain their original dimensions during the operation of cleaning and mechanical drying, instead of shrinking, as is often the case at present Finally, it has been proved that by treating the materials with the solution above described they are rendered antiseptic, and hinder or resist microbian infection.

Foreign Textile Centres

MANCHESTER.—Business has recently been fairly active, the woolen departments having been brisk. The variety of attractive dress goods materials brought forward this season is very large, both the woolen, silk, and cotton departments contributing liberally to the collections shown. Amongst the new styles exhibited for the autumn trade are included lustrous surface goods, not necessarily of mohair, although that material receives a liberal amount of support. Raised silk figures matching the ground, crepe effects, and solid cloths with cord stripes are amongst the materials likely to come forward Green, to which we have previously referred, is coming to the front, and capes, which can only be fittingly described as hideous to the artistic eye, are frequently worn in that color in conjunction with skirts and bodices of another shade. The new fashionable shade does not, unfortunately, suit many people. Serges and fricotines of various styles are also to the front. In silks warp prints continue to receive attention, and these styles are shown in conjunction with other effects. In the American market plain dress goods of European make are not so abundant as some think. The new Customs Administrative Bill is undoubtedly causing much uneasiness amongst firms interested in the United States market. Its provisions are glaringly unjust, and if passed in its original form the measure will practically take from importers the right of appeal against the arbitrary decisions of the United States Customs appraisers. One clause of the new bill provides for the infliction of penalties on every advance of value on appraisement, irrespective of amount. If, for instance, a consignment of Manchester velveteens is advanced by only a ¼d. a yard the importer is liable to a penalty, and this in face of the admitted liability of the appraisers themselves to error. That the Bradford trade is brisk would appear to be shown by an action trial here on Monday, a Bradford merchant being plaintiff, and a local Greek shipper defendant. The latter had declined delivery of goods ordered a month before, on the ground that there had been undue delay. It was stated by the plaintiff that in the present condition of the Bradford trade it would require five weeks to weave and six weeks to dye the goods, the result being a verdict against the defendant. Diagonal stripe serges are shown, some variety being shown in the manufacture of these goods. For instance, one make is covered with irregular dots, another has a marble appearance, and a third pale blue plaids upon an olive ground. The commoner makes of serges have not been doing well at all. There has been a good opportunity for some makers in the production of cloths suitable for ladies' cycling costumes, for which the demand at present is considerable. The carpet trade is active, and heavy shipments have been made to the Dutch ports either for consumption locally or in transit to interior points. In the South American markets business is fairly brisk, and Buenos Ayres is improving. Yarns are not in a strong position, and there is not much doing in Egyptian qualities. For cloth the demand is not active Exchange, which is no better, forms the subject of considerable speculation, an improvement being spoken of by many. The offers to hand from India are rather low, and there is not much doing for China. The stock of greys in Shanghai now exceeds two million pieces, a figure nearly double those for the corresponding period of last year. The preponderance of American sheetings over English in the Shanghai market is worthy of note. They form one of the few items in which America can hold her own with Lancashire in a foreign market, the trade being largely, of course, a surplus over the requirements of the home market.

HUDDERSFIELD. — In Huddersfield, the declension of the American trade has made general business quieter, but most mills are still in full employment.

BRADFORD.—The recent suspensions of two top-makers and a firm of spinners, with liabilities amounting in the aggregate to nearly £200,000, have been accompanied with the usual crop of rumors as to further impending disasters, and, as might be expected, the wool market has been in an unsettled state. But as the transactions of the three interested firms have been a good deal intermixed, the actual magnitude of the loss to the general trade will not nearly approach the nominal amount of the liabilities, although the statement placed before the meeting of creditors in the case of A. Smith & Co., which was the earliest suspension, discloses an unusually small proportion of assets. The effect on the wool market has been that nearly all buying of raw material has been suspended until the full extent of the catastrophes is ascertained, but up to the present there has been little nominal giving way in the prices of fine or crossbred colonial wools, although, no doubt, some weak holders could be found who would be ready to accept a substantial reduction in price to secure immediate business. One of the best informed and largest operators in wool here informs me that when the air gets cleared of the results of these failures, we may look for a more healthy and firmer tone in all classes of raw material. In English wools the . al lull as we approach the clip time is beginning to pervade the market, and there has been very little new business passing in either lustrous or strong wools. In mohair and alpaca no new business is reported, but it is said that some small lots of inferior hair have recently been offered in the market at prices slightly under those recently ruling. It is now too late for raw mohair to be worked up into goods to catch the present summer season, and the unusual quietness of the lining business to the United States is having a depressing effect on the price of alpaca. In worsted yarns there is little new business offering in either coating yarns or in dress goods sorts, either for home consumption or for continental use, but there is a considerable business doing in fancy and special yarns, which keep a good many spinners in a far less dependent position than they otherwise would be. In piece goods there is a great disparity in the position of the manufacturers of the various characters of goods, as the trade to America is particularly depressed in both coatings, linings, and, to a lesser degree, in dress materials, and the travelers who have recently returned from the States have, as a rule, experienced a most disappointing time. There can be little doubt that the publication of the exports to that country for the present month will show another considerable falling off, but even in this market I am told by a high authority that there are signs of better times not so very far ahead. The South American business and the trade with Eastern countries, and that with the colonies generally, continues to show a most healthy expansion, although the disturbed state of South Africa must soon depress business to some extent to that country. In the home trade there is still a short supply of those styles which have been most favorably received for the spring trade, and recently there were two or three buyers of high-class fancy goods in the town who only leave London when they find it impossible to supply their urgent wants without doing so. Novelties in bright crépons; canvas cloths, high-class jacquard garland figures, and silk warp shot glacés are still in great request, and when the latter have been effectively proofed to prevent the possibility of crinkling from the contact with wet, no more beautiful or satisfactory summer garments could be imagined. For next winter there seems every probability of elaborate boucle effects on bright colored backgrounds and heather mixture coating serges being largely worn, in addition to the quieter plain-colored coating serges and poplins.

LEEDS.—Although there was a little quietness immediately after Easter, there are already signs of improvement, and there is every probability of a busy time up to the Whitsuntide holidays, which is a great season for the purchase of ready-made goods. Business in the warehouses is not over-brisk, and coating manufacturers complain of the scarcity of new business. The season for furniture plushes is again opening out well, and some beautiful styles in tinted fabrics of this class are now being produced in the Dewsbury district. In the Guiseby and Yeadon districts there is a better prospect for the coming winter season than has been noticeable for some time past, and some firms have had a large

number of styles in mixture costume cloths and friezes taken up. In the heavy woolen districts there is also a better tone. Although there is little American trade, the demand for fancy woolens and serges for the home and colonial markets is good, and there is a large demand for the East both for light woolen blankets and rugs. It seems, however, that the Japanese are making an attempt to retain a good share of their manufacturing in their own country, as I hear that large orders for manufacturing machinery have lately been placed in Leeds. The trade in fancy rugs still keeps up wonderfully well, and blanket-makers have obtained season's orders quite equal to the average in size, although they complain a good deal of low prices. In flannels, the arrangements for next season are now to a large extent made, and as far as can be known there is every appearance of a better season for Yorkshire makers, who are now busy preparing sample ranges for travellers.

KIDDERMINSTER.—It is stated that the output of the local looms, as shown by the railway returns for the month of March, beats "record." Never before has the bulk of carpets sent out of the town been so great in any one month.

NOTTINGHAM.—Rather more activity is observable in most branches of the local trade. Manufacturers and warehousemen are looking forward to Whitsuntide with some anxiety and a certain amount of hope. Should the weather remain fine and warm until that period, doubtless there will be a good demand for lace goods amongst retailers, and for the next few weeks matters meteorological will divide attention with the state of trade. A pleasant Whitsuntide, followed by a hot summer, would be the greatest blessing the local wholesale trade has had for a long time. Meanwhile, preparations are being made to meet any demand that may arise. Cotton millinery laces are in active request. Valenciennes still retain their popularity, and large quantities of these goods are selling. Although American and crochet laces continue moderately active, the demand is below the average. At one period it was expected that Oriental laces would be extremely popular, and local manufacturers anticipated a large sale for these goods. They are still inquired for, but not to the extent anticipated. For the home trade and for export muslin laces, lappets, and *entre-deux* with imitation openwork embroidery, are in moderate request. The silk lace trade remains in a dull and lethargic condition, without immediate prospects of improvement. A limited inquiry is experienced for silk Chantilly, guipure, and Bourbon laces and nets. Business continues brisk in the bobbin net, plain tulle, both in silk and cotton, and mosquito net branches. Prices remain firm; there are no large quantities of goods in hand, and as a consequence machinery is well employed. Aprons, caps, ruchings, and other articles keep the fancy making-up branches well employed. A large business is still being done in chenille and other spotted falls and veilings. A good demand is experienced for Honiton braids, purls, cotton and linen beadings and braids, principally for export. There is only a sluggish inquiry for everlasting, beau ideal, and other embroidery trimmings for underclothing, and shrinkage rather than expansion is to be noted in these goods. Irish trimmings are scarcely inquired for. Indian muslin curtains appear to be falling out of favor to a very great extent, and consequently manufacturers of lace curtains, window blinds, and toilets are kept actively engaged. Competition is, however, very severe, and the possible production is largely in excess of the actual demand. Activity still characterizes the hosiery trade, especially in the lighter variety of goods. Stockings and half-hose embroidered with silk are selling freely. Some beautiful lines are produced in these goods both for home and for export. Merino stockings in black and shades of tan are selling extensively. Fancy half-hose in merino and cashmere are in good request. Seamless hosiery has attracted a large amount of business. Natural wool vests and combinations are firm in value, and manufacturers are moderately engaged.

SOUTH OF SCOTLAND.—Manufacturers in the South of Scotland woolen district are still complaining that things are not as they should be, although it must be said that those makers who are making worsteds and fine Cheviots are not badly off for work; but unfortunately the taste for regular makes of Scotch tweed is not in favor, hence a number of makers are badly off for work. Confirmation orders come in slowly. Manufacturers will be forced to advance prices, as they cannot go on booking at present prices, with the expected further advance in the price of wool at the ensuing London sales.

BELFAST.—Though manufacturers have been kept busy of late, and the turnover of cloth does not show any appreciable falling off, the condition of the spinning trade remains unsatisfactory, values being slightly lower on the month. Demand for yarns on the part of home manufacturers has been very quiet since last report, in fact entirely confined to the purchase of small sorting up lots as required from day to day. On shipping account, however, there has been rather more doing, the Board of Trade figures showing an increase in quantity equal to 21.8 per cent. for the three months over the same period last year. Whilst warp yarns and superior wefts are unchanged on the month, the tendency of prices has been weak so far as common line and tow wefts are concerned. At the same time stocks with spinners are comparatively light, and some have still a good deal of old contract work on hand. Bleaching cloths in the various widths and weights met with good attention for some time past, but lately there seems a little slackness in the giving out of fresh orders. Ballymena makes have also been rather duller, but values generally are well supported. County Down makes are in very fair demand, and production well controlled. Cloth for dyeing and also dress goods are moving off fairly well, but not quite so much doing as a short time ago. For roughs and other classes of tow goods a well sustained business is current, and prices rule firm. Towelling, glass cloth, and other household linens are in very good request, and various makes of union goods are still pretty freely bought. In linen handkerchiefs business has not been brisk, but cambric makes of all kinds and cambric cloth meet with a very good demand, supplies of hand-loom setts being in fact very scarce and likely to continue so during field work. Damasks move off steadily, but on the whole demand is not so brisk as previously.

LYONS.—Some business is being done in silk goods in Lyons, but this is only in moderate-sized parcels and small lots, and no large transactions are reported. From consuming markets the reports about retail sales in the first half of April have not been very cheerful Buyers are, therefore, acting cautiously, and in view also of the low prices for raw material and the poor results of the business with America, the demand for goods keeps within the limits of actual needs. This cautiousness leads also to some troubles in the deliveries, especially of printed-warp styles, stocks of which have not been depleted with the quickness that was expected. Otherwise, however, and notwithstanding the production of the last 18 months, stocks are within safe limits. Fashion is favorable to silk, and the only factors that now affect the situation are the raw material market and the possibility of political complications. Orders for fall are coming in slowly. Some attention has been given to black and staple goods for fall, but only for testing the ground. It is not known to a certainty what are likely to be the leading sellers, and under these circumstances buyers can do nothing else but order a little of everything. For present consumption the lighter tissues are very strong. Muslins are in great favor and the activity in production continues. In tulles the supply cannot keep up with the demand. The warp-tinted taffetas are making room for these light fabrics and the light surface printed silks also come in for a good share of consumption. The heavier and richer tissues are slow for present consumption, but receive attention for fall. Satin duchesse is among the goods that are recommended for next season. An active demand is reported for staple ribbons, especially in satin-faced goods. A better business is reported in plain velvets for fall. Striped and shaded velvets are also better.

CREFELD.—The weather in the first half of April was not very favorable to the consumption of silk fabrics, and as retailers have not sold much, their demand for re-assortments has been limited, and wholesale distributors, as well as manufacturers, report business dull. The conditions of demand are sufficiently slow to make it appear as if the dead season had made a premature appearance, were it not for a fair movement in taffetas and allied fabrics, but

especially black taffeta. Taffetas are expected to continue in demand also for Fall, but it is believed that stocks will be sufficient and that no scarcity is likely to be felt; buyers are therefore not anxious to place large advance orders. Few orders are being placed with manufacturers either for Spring delivery or for next Fall. The trade seems satisfied to finish the Spring season with what it has on hand, preferring a possible shortness rather than an abundance of goods. The course of the raw material market and the general tendency are not favorable to the adoption of a more decided policy, and to a certain extent justify this caution. The same applies also to the fall order business, for which, added to the other causes, there is also the uncertainty as to what will be the leading styles. The future of the trade in dress and trimming silks has in it some uncertainties to which the probability that an increase in favor for plain and fancy velvets may interfere with the sale of silk piece goods also contributes. In the manufacturing department the dull period consequent on smallness or absence of orders in other lines finds some compensation in the fact that production for tie silks is active, orders having been booked in good quantities and at satisfactory prices. Although the probability that velvets may come to the front of favor exists, the industry is not very busy. Orders from the United States, which would at this time be under execution, have been disappointing in volume and leave room for improvement.

ZURICH.—Advices from America are not encouraging, while the English buyers are also very cautious, so that the market here is deprived of the support of its two best customers. Stocks are not being reduced at the rate desired, and the weather has not been favorable to an increase in consumption. It seems as if the dead season had already arrived. The demand for warp printed silks has decreased, and it is found that some of the manufacturers who had gone heavily into the making of these have on hand larger stocks left than is desirable. Few buyers have been in the market, and they have shown greater preference for specialties than for general lines. Changeable taffetas are in demand and in limited supply. The same is the case with white marcelines, which have also been the object of advance orders. The better classes of fancies, fancy stripes, etc., sell slowly. Cheaper checks and stripes sell well, especially in black and white. For Fall and Winter the tendency seems to be toward plain silks.

THE TIN CRYSTAL TEST FOR DYESTUFFS.

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

A recently published test for an Alizarine Black is described as follows: "Test to distinguish Alizarine Black (Badische Anilin und Soda-fabrik) from other blacks upon wool, viz.: Apply to the cloth a few drops of hydrochloric acid and let it stand for ten minutes; if it turns reddish, it is not Alizarine Black. If no change is observed, add a few more drops of the acid and sprinkle it over with a little tin salt, which will be dissolved by the acid, and after half hour wash in cold water: if the color be degraded, for instance to cream, grayish blue or ashes of roses, etc., it is not Alizarine Black."

The test as thus described seems likely to lead to misunderstandings. In the first place such a thing as a real alizarine black does not exist. Real alizarine does not dye a black. The name alizarine has been applied to other colors which dye fast colors on wool mordanted with chrome and tartar. Such a use of the word confuses the proper classification of the dyestuffs, and misleads those not versed in chemistry, and who quite naturally suppose that an "Alizarine" Black is a derivative of alizarine, or in some way stands in a close chemical relation to it.

The alizarine black referred to in the excerpt quoted, is not an alizarine dye. Alizarine is an anthracene compound, a dioxyanthrachinone. The difference between alizarine and the "Alizarine" Black is still further emphasized by the fact that "Alizarine" Black is a double salt, or compound of naphthazarine with bisulfite of soda, while alizarine is not a double salt, and does not contain any bisulfite of soda.

It may be technically legitimate to apply the term "alizarine" to colors which are derivatives of alizarine (dioxyanthrachinone), but it is difficult to see how this term can be applied to derivatives of other compounds essentially different from alizarine, as naphthazarine, without causing much misunderstanding, misleading those who suppose that, when a dye is called an "alizarine," it must be a derivative of alizarine.

The action of stannous chloride, or tin crystals, and hydrochloric acid is powerfully reducing, that is, the compound causes oxygen to be removed from the substance on which it acts. Its action is that of a discharge. The behavior of this reagent may be useful in identifying or distinguishing certain dyes, but I cannot see what possible bearing the test has in indicating the fastness of a dye to light, air, moisture, soap, and the agents which practically determine the value of a dyestuff. None of the agencies to which a dyed fabric is exposed are, so far as I know, of a reducing nature. They are precisely the opposite; they are oxidizing. It is not seldom that a substance, which is difficult to oxidize, is easy to reduce. Nitrobenzene, for instance, is difficultly oxidized, but easily reduced by tin crystals to aniline. It might, indeed, be inferred that a dyestuff incapable of withstanding this test, and hence reducible, would be better able to withstand oxidation, and hence would be faster to light, moisture, and atmospheric oxidation. Substances which are difficult to reduce are often very easy to oxidize. Thus alcohol is difficult to reduce to ethane, but oxidizes easily to acetic acid. So, again, one might infer, and not without some reason, that if a dyed fabric should resist the powerful reducing action of stannous chloride, it might not withstand the persistent and strong oxidizing action of atmospheric oxygen assisted by light and moisture. So far as indicating that a dyed fabric possesses a fastness that makes it valuable for practical use, the tin crystal test is useless. The conditions which this test indicates that a dyed fabric will resist do not exist in the actual use and exposure of cloth. The test is of value, however, in ascertaining if the dye can be used for discharge printing.

I was interested to ascertain if the standard dyes could withstand the tin crystal test, and so moistened with tin crystals and hydrochloric acid woolen cloth dyed with indigo and alizarine mordanted with chrome and tartar, and with tartar and alum.

Cloth dyed with indigo on being moistened with tin crystals and hydrochloric acid, soon turned a light greenish yellow, and the cloth dyed with alizarine on alum and chrome and tartar mordants also failed to withstand the action of the chemical.

Indigo and alizarine are two of the oldest and fastest dyes known. It has taken many years of study and experiment to bring the artificial dyes up to their standard of fastness. To reject these dyes now because they fail to resist the action of stannous chloride, or other laboratory chemicals, is too absurd to be seriously considered.

But, on the other hand, if the tin crystal test is of any value in determining the fastness of dyed fabrics, then why should it be restricted only to the so-called "Alizarine" Blacks? A simple test that would show if a color were fast to light and exposure would be of great value. If the tin crystal test in any way imitates the action of light and exposure on a dyed fabric, then let it be applied to all dyes.

There are, however, other important properties that a dye should possess aside from fastness to light, if it is to give the best results. For instance, it should not smut or crock. Neither should it be affected by dilute acids. If it is susceptible to the action of dilute acids it cannot be expected to withstand the action of rancid perspiration. A good way to test this is to warm a square inch of the dyed cloth in a test-tube with water, to which a few drops of sulphuric acid have been added. A dye which is at all stripped by warm dilute acid is also useless for "cross-dyeing."

THE St. Andrew's (N B) Board of Trade is investigating the feasibility of establishing a rubber shoe factory in that town.

THREE tramp ocean steamers visited Portland, to load spool wood, after the close of the regular steamer service last year. It is now said that the demand this year will be larger than ever before, and half-a-dozen tramp steamers may come.

CHEMICALLY CLEANING NOILS AND WOOL WASTE.

A method of cleaning waste fibres of this class has just been devised by two Austrian inventors. Waste stained with pitch, tar, and other coloring material, is placed, according as it is required to be slowly or rapidly softened, in an aqueous cold or warm solution or emulsion of heavy or light oils of tar prepared by means of soap, wherein it is allowed to remain until the tarry lumps are thoroughly softened. The soap solution is a 5 per cent. solution—that is to say, 1 lb. of soap is dissolved in 20 lbs. of water. The quantity of oil of tar used for this emulsion depends upon that of the noils or other wool or hair waste stained with pitch and other coloring matter. The more impregnated with tarry or coloring matter is the material to be purified, the more tar oil must obviously be used, 500 grms. of tar oil and 1 kilo of soap being a minimum, and 1 kilo of tar oil being a maximum. By emulsion is understood the mixing of oily and watery liquids in such a finely-divided state as to appear to the eyes in the form of a milky liquid, although the same is not a chemical combination. The component parts of the solution can only be detected by the microscope. The emulsion is made with due regard to the capability of combination of the oil of tar, by diligently stirring the soapy water and pouring the oil of tar in the latter during such stirring. It is obvious, as well as permissible, that such an emulsion may be made in any suitable machine, such as a centrifugal machine. The most suitable oils of tar are the hydrocarbons boiling at a temperature exceeding 100° C., and contained in coal, peat or brown coal, wood or bitumen. Hydrocarbons having a high boiling point can likewise be used, such as those of mineral oils, generally known under the name of blue or green oils. The heavy oils of tar have a specific gravity of from 0.91 to 0.95. Light oils of tar or crude benzol are oils which have a specific gravity of from 0 91 to 0.95 at the most, and form a different class of oils, boiling below 100°. With the exception of the benzines produced from petroleum, which have a specific gravity ascending up to 0.87, the benzol and toluol hydrocarbons won from coal, brown coal, bitumen, etc., which boil under 100° C., can be used in these operations, as well as all similar products capable of being distilled. The exception of the above products is based upon the fact that they are not ready solvents, and are, moreover, inflammable. The use of a hot solution or emulsion considerably accelerates the time taken up by the softening process. As soon as the tarry clumps or clods of the noils and other wool and hair waste are well softened, they are removed and allowed to pass through a powerful compressor. In case any particles of tar or other coloring matter still adhere thereto, the above process will have to be repeated, after which the noils, wool, and hairy matter thus treated are placed in a clear solution of soap, subsequently compressed, and finally subjected to washing. The process may be so far modified that instead of the solution or emulsion mentioned, an ordinary heavy oil of tar may be used. The noils, wool and hair waste are allowed to stop there, being then removed and finally squeezed in the compressor. Subsequent to the last treatment—*i.e.*, after the squeezing operation—the oil of tar is removed by a soapy solution, or the noils, and wool, and hair waste are treated by other well-known extracting means.

DUPONT & WILSON, Kingston, have imported English machinery for the manufacture of carriage oil cloths, and are doing a successful trade.

A PETITION made to the court for a winding-up order in the matter of the Rubber Reclaiming Company, Montreal, has been granted, and a meeting ordered for the 14th inst. The company was chartered in August, 1894, with an authorized capital of $100,000.

THE Brussels carpet factory at Elora, Ont., proposed to remove to St. Henri, a suburb of Montreal, if they got a bonus of $20,000, but the ratepayers did not enthuse and the by-law was defeated last month. St. Henri has had some experience in the bonusing of industries.

AT THE LOOM.

Watching at the busy loom
Where varying forms one form assume,
One sees a white and mazy line
Of thread, whose colored strands combine,
Until from chaos, what was sought,
A thing of beauty has been wrought,
A fabric quite ethereal
Brought out of rough material,
Whereby we learn, some soul has caught
And trained to purpose, patient thought;
Some kindly soul, with wisdom keen,
Has formed for us this weird machine,
'Tween him and us the difference is,
He worked his thought to purposes,
While you and I have thought, and then
Grown tired, stopped short, while other men
Took up and trained and careful wrought
The full perfection of the thought.
For unto us are well supplied
The thread to needed colors dyed,
Patterns, and strands, whose style and strength
Shall beauty give to width and length,
And we may show, if we but will,
How thought attains to wondrous skill,
Yet are we slow to comprehend
That colors without thought offend;
That flowers, misshapen, have no grace;
That slightest detail fills a place
In all designs, since as it grieves,
The master's eye at once perceives
It is no artist's hand that weaves
Since he, presumptuous, has not caught
The full development of thought
Oh, little human thought—how small
The portion used in life at all!
And yet, oh, friend, we find it must
Be woven carefully, true and just,
In every pattern which we take,
To weave for blessed someone's sake,
Else is our labor but distress
To those our toil assumes to bless,
For in our fabric that survives
Alone, which blesses the other lives,
Wherein is shown the toiler caught,
The full perfection of his thought,
For every life is but a loom,
That time and substance doth consume
In endless effort to effect
The good results our friends expect;
And failing, are our products ill;
They but betray our lack of skill,
So happy he alone shall be
Who works so well the world shall see
How he with patient effort taught
His hands to make the best of thought.

—*Augustus Currey.*

FINISHING WOOLENS.

Although goods previously steam-lustred will not dye through as quickly as pieces which have simply passed through the stages of wet finishing, the manufacturer finds it advantageous to apply the lustre process first. The influence of the steam-lustring on the color is marked, as the shade becomes paler or changes entirely. This applies chiefly to lighter colors.

Full-lustre cloth is first steam-lustred after the drying. It is, for this purpose, pressed hot twice, either in the screw press or in the hydraulic press. It is then wrapped tightly around the steam-lustring cylinder and submitted to the action of the steam for from thirty to forty-five minutes. The cylinder is then permitted to

cool, or, if very high lustre is not demanded, the cloth is unwrapped after from one hour to an hour and a half, and rinsed with clean water in the washing machine. It is again dried, shorn, or singed and pressed ready

A novel style of this type is based on the principle of steam-mixed lustring The pieces are subjected to the action of boiling water and steam. After scouring by passing the piece through a tank filled with warm water and then through a pair of squeezing rollers, the fabric is passed through boiling water in the crabbing machine, and next, very firmly wrapped upon a hollow, perforated copper cylinder, wrapped in a linen or cotton cloth and firmly tied with a cord Steam is then admitted to the cylinder, and the wet fabric is steamed for eight or ten minutes. The cylinder is made to rotate slowly, so that the water cannot draw to one side. After steaming the fabric it is passed through cold water. It is then washed. After washing, the fabric is dyed and rinsed. The drying is effected in the open air or in machines. The following processes of finishing depend upon the kind and quality of the fabric, and whether or not it is to receive much lustre.

In the crabbing process, when seven or eight pieces of woolen fabric have been sewed together ready for work, the water in the first box of the machine is raised to a boil, and about a quart of a caustic-soda solution at a strength of about 20° Tw. is added. The cloth is then run upon the bottom roller with a tension of twenty pounds and upon the top roller at its own weight only. Having passed the first box, the second is filled with water and the water raised to a boil. Into this box the goods are then run in the same manner as in the first, the tension and pressure being kept at the same points. Then in the last box the water is kept cold, and into this the goods are finally run.

The goods will now be ready for steaming. In the steaming the number of runs, or applications of steam, will be regulated by the finish desired A steaming of fifteen or twenty minutes with one reversal will insure good work and be likely to lead to a uniformity in coloring and finish at the two ends of the piece.

The rough finish in certain woolens is popular. In this finish the aim is to preserve the exceedingly soft, fibrous character which is produced on the surface of the goods by the teasels. This luxurious finish is secured in the finishing department as follows: the goods are scoured, pulled and dried in the customary manner and applied to the gig in a dry state. As "old work" is found to act more advantageously at the start than "new work," the former is used, until the fibres are opened and arranged in a symmetrical line, when more or less new teasels are introduced. After the nap is straightened and arranged by the old teasels, new ones are inserted and the piece well gigged by them. The harshness is somewhat relieved, and the teasels assisted in their work, by the application of a slight degree of moisture through the nozzle of a perforated hose pipe. Brushing follows gigging, which completes the work on this class of fabrics. In the case of blankets, a hand comb is ultimately utilized to draw the fibres across the face in the direction of the filling at the intersections of the "headings."

The procuring of an efficient finish is sometimes prevented through the use of poor sizing on the warp yarns. A good sizing should not affect the colors, and should be easily removed in scouring, and it should be comparatively free from unpleasant odor. Inferior qualities of size cause an endless amount of trouble in the finishing, as, while it is absolutely essential to remove all trace of smell, it is difficult to do this without milling the piece. It is far preferable to use size which is comparatively free from any unpleasant odor, as then there will be no danger of the cloth being sour from this cause. A sizing which has proved all right is made of 18 ounces of best glue, 3½ ounces of concentrated glycerolle, and 8 quarts of water. The glue is immersed in cold water for about ten hours, to which the glycerolle, which has been previously dissolved in a quart of boiling water, is added. This compound is clean, free from lumps of any kind, and easily washed out of the cloth during scouring, thus averting likelihood of affecting the finishes.

Letters patent have been issued to the Canadian Hammock Manufacturing Co., Paris, Ont. Capital, $6,000.

CAUSES OF IRREGULARITIES AND UNEVENNESS IN DYEING.

With the best of care, and with the most conscientious attention to details on the part of the dyer, yarn or pieces will occasionally escape his vigilance, only to be returned to be redyed, or stripped, and be laid away in stock until some time when a suitable shade can be dyed on the piece.

There are times when goods are sent away from the dye-house, day after day, without a flaw or defect of such magnitude as to be noticed elsewhere, and again after a successful run of months something will occur that causes almost endless trouble.

The most noticeable form of irregularity is the uneven absorption of the dye, and although many views are often expressed regarding the cause, yet, with a little care, the true reason can be generally found. Take for instance, wool; if this fibre is not thoroughly scoured as it comes from the bale, if all the grease, sand and dirt of all kinds are not effectually removed, trouble will certainly occur later on. One of the most potent causes of irregularity in wool, is the presence of lime soaps which are the result of using hard water in scouring, or else an inferior grade of soda ash in conjunction with soap. If a lime soap forms, it is most certain to become attached to the fibres and it is quite impossible to remove it. Another source of complaint is often made by the dyer to the presence of spinning-room oil on the yarn; this oil is a necessity to enable yarn to be made, and it is also quite necessary for the same oil to be removed from the yarn by a scouring process before the yarn can be dyed; any oil remaining will act as a resist to any color, and hence uneven results will occur. It is needless to draw attention to the necessity of giving such yarn a good rinsing as soon as it is scoured, for, if it is to be dyed in an acid bath, any soap remaining on the yarn will be decomposed, setting free a fatty acid which will act in exactly the same manner as an ordinary oil or grease.

The mordanting of woolen goods requires attention, for if the mordant is not evenly and regularly taken up by the fabric, an uneven dyeing will most certainly result. In this case, too, it is best in dyeing mordanted goods, particularly if they be of an average good quality or better, to feed the coloring matter only as fast as the material will take it up, or, if this is not practicable, then to commence heating the fully charged cold bath, and gradually raise the temperature to boiling. This method no doubt requires a little longer time, and the daily output per kettle may not be as great, but the satisfaction of having thoroughly dyed fabrics turned out will amply repay for any seeming delay. The most reprehensible practice is to add pieces to a boiling bath; this method alone is responsible for more unevenly dyed fabrics than all the others put together.

With cotton, an almost similar condition exists; the boiling-out process is essential, and to be successful, a sufficient length of time must be given to it, in order that the alkaline liquors should penetrate to centre of the mass of yarn. For cotton yarns which are to be mordanted, a complete immersion in the sumac or other tannin liquor is of the utmost importance. Likewise, the application of the metallic salt which is to fix the dye should be applied with care. The best means is to dissolve the salt in a small quantity of hot water and then add this solution to the kettle. Some of these mordanting salts dissolve with great facility, but it is possible for small particles to float around in the bath, or sink to the bottom, and attach themselves to the yarn and cause spots which are exceedingly annoying and difficult to remove. If cotton is not thoroughly wetted with the mordanting liquors, or if they are not well washed after mordanting, the colors produced with the dye will in most cases rub. A cause of rubbing not generally noticed has recently reached the attention of the writer, and appears to be rational; it is due to the too liberal use of a cotton "softener" which contained a fair amount of free fatty acid which re-acted upon the color so as to render it soluble, or to form a fatty acid salt of the color base, at any rate, the same yarn finisher simply by washing in pure water and dried, did not rub at all.

Silk is a fibre which requires more care in working than either cotton or wool, and particularly if light shades are to be dyed;

The most important point in the treatment of silk is the discharging or ungumming; this should be done slowly, especially if samples are to be dyed. Iron mordanting is important and the excess of precipitated ferric oxide should be thoroughly removed The fixation of iron by means of soap—a practice often followed—is not to be recommended. Of course, the soaping of silk in hard or calcareous water carries with it the objections raised in regard to wool scouring.

The strong affinity which silk has for many dyes calls for a special note; the color should be fed to the dye bath in portions, and then only so fast as the goods take it up. The system of adding dyes in powder form to the bath is also objected to; the dyes should all be passed through a bolting-cloth sieve, after previously being dissolved in water. Many silk colors can be well kept in glass-stoppered bottles, and used as required. This system is followed in many places, especially where light and delicate shades are produced. To successfully remove dye-specks from silk goods without rendering the piece defective is almost impossible.

On the whole, it is safe to say that uneven results are due to (1) imperfect scouring; or (2) too little rinsing; or (3) too much dye in the dye bath at one time; or (4) boiling too soon after entering the goods, and, as a general rule, much imperfect work is directly traceable to too short a time being allowed for operations which are known to require a longer period. It must not be supposed that the bulk of the work turned out of our dye houses is imperfect on account of unevenness; but it does happen occasionally, especially when some pieces "must be dyed at once—order came in this morning, and the parties can't wait—hurry them up, even if you must let other orders stand."

LONDON WOOL SALES.

The third series of colonial wool sales for the current year commenced in London, April 28th. Catalogues comprising 11,000 bales, with a representative show, have been offered. The attendance from all parts is a large one, but competition, on the whole, has been of a somewhat hesitating character. French and German buyers are here in great numbers, and the latter are very active operators. As compared with the closing rates of last series, cross-breds about hold their own, but merinos are from par to 5 per cent. easier. Only a very small quantity of Cape wool was offered the first day. Competition for these has been fairly active; snow-whites are unaltered, but greasy are 5 per cent. cheaper. No doubt the cheap direct colonial purchases, which have of late been thickly arriving, have had great tendency in keeping down values, but the now ascertained shortage of supply, combined with the steady consumption which has been going on for so many months past in manufacturing centres, should make the firmness of wool rates absolutely established.

LONDON FUR SALES.

The great annual fur sale, at which the prices of all varieties of furs are fixed every year for the whole world, has recently taken place in London. Buyers were there from many parts of North America. Annual fur sales are held at Leipsic and Nijni Novgorod, but London prices rule the market. No less than 20,000 sables were put up here, and so were 50,000 skins of grebe, 65,000 skins of red fox, 500,000 skunk skins, and other stocks, in part as follows: Eight hundred thousand muskrat, 150,000 raccoon, 215,000 opossum, 25,300 Thibet lamb, 30,000 squirrels, 102,000 martens, 70,000 minks, 37,000 lynx, and 8,000 black bear. Little ten-inch square chinchilla skins brought $105 a dozen. Six or eight silver gray fox skins brought $625 apiece, and certain sea otter hides fetched $1,200 each. Sables fetched 20 per cent. more than last year The sales began every day at 10 o'clock in the morning, and lasted until 7 or 8 o'clock in the evening, with an interval of about an hour for luncheons, provided free by the auctioneers.

NORFOLK & NEW BRUNSWICK HOSIERY CO., New Brunswick, N.J., have lately added two of the new style Bramwell feeds, built by Geo. S. Harwood & Son, Boston.

THE WOOL MARKET.

MONTREAL.—Sales are small and slow at present, manufacturers preferring to hold off buying until they see what orders are forthcoming from the spring samples which they are now showing. The approaching elections have also something to do with present buying for a hand-to-mouth business. We quote Capes, greasy, 14 to 16c.; B.A. pulled, 27 to 33c. Some American territory wools are being offered in this market, but we have heard of no sales. London sales are closed and prices of all fine wools have been maintained; inferior parcels neglected.

TORONTO.—The new clip, wash ' is now coming, but not freely as yet. The market is exceedingly quiet, and promises little There is no demand whatever from the United States, and values are therefore based on English quotations exclusively. Wools such as ours are now going at 9¾d. and 10½d. in the English market, so that the price to farmers here cannot be much more than 18c. Merchantable Canadian washed is quoted at 17 to 18 cents; unwashed, 10 cents.

BRIEF BUT INTERESTING.

The Duke and Duchess of York recently visited Salford, and opened the Technical Institute, which has been built by the corporation at a cost of £70,000.

The paper collar has had its day, now the paper shirt threatens us. A man named Johnston, in Pennsylvania, proposes to manufacture them to be worn for warmth between inner and outer shirts.

The growth of a direct trade in wool between Australia and European ports, is causing some uneasiness among the London wool merchants, says the *Textile Mercury* The French and German wool combers have created quite a demand for wool to be landed at Dunkirk.

A great deal of success has attended recent experiments in wool washing in Australia with water from artesian wells. Most growers have hitherto been unable to scour, owing to the lack of water, but if artesian wells supply suitable water, they expect to enhance their profit considerably owing to freight savings.

The *Chemiker Zeitung* expresses the opinion that *ang-khak*, a fungoid product used in the Celestial Empire to impart a fine purple color to food and liquors, furnishes the first instance of the technical use of microbia. The fungus is specially cultivated in the Province of Quant-tung, and is nurtured in a dark cold place on boiled rice. After six days it has a red color which grows darker. The coloring matter dissolves readily in alcohol with a splendid garnet red color. The fungus belongs to the group of the Telebolae. It vegetates upon any kind of carbohydrate in the presence of oxygen. The chief difficulty in its preparation is to keep away other fungi and bacteria, especially a species not yet examined. This is effected by means of a trace of arsenic, which prevents the growth of other bacteria without interfering with the development of the ang-khak. The coloring matter can be extracted with chloroform In a state of purity it dissolves in mythyl and ethyl ether, glacial acetic acid, aceton and ethyl acetate, but very sparingly in water and dilute acids, and not at all in benzine, petroleum ether, oil of turpentine, carbon disulphide and glycerine. It melts at 50 degrees, and at a strong heat it is decomposed without subliming The coloring matter behaves like most of the aniline colors, but it is distinguished by its precipitability with mercuric oxide

VALLEY worsted mills, Providence, R.I., have lately started three improved Bramwell worsted feeders, built by Geo S Harwood & Son, Boston.

THE Montreal Trade Bulletin says. "In our last issue we referred to the cutting in prices going on between two large woolen mills, and now we learn of a third mill falling into line by offering a still further cut, which it is presumed the others will have to meet in order to keep their respective customers."

Among the Mills

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

The Tryon, P.E I., woolen mills are again in operation.

The Clinton *News-Record* announces a new woolen mill in that town

Clark & Thompson, Guelph, Ont., are going into carpet weaving.

A syndicate is being formed to advance the flax industry in Belmont, Ont

The Granby Rubber Co., Granby, Que., is running its factories night and day

C. T. Young, Lanark, Ont., is now running the Beaverton, Ont., woolen mill.

In Hamilton, Ont., the employees of the cotton mill have organized a baseball team.

The woolen mill in the village of Fallbrook, Ont., is offered for sale by W J. Wallace, Renfrew, Ont.

Walter McDonald, of Glendyer Woolen Mills, C.B., reports that the mills are doing well at present.

The hosiery mill, Beeton, Ont., has not been sold, as the highest offer did not reach the reserve bid.

Dr. McConnell has purchased a controlling interest in the Morden, Man., woolen mill.—*Winnipeg Commercial.*

D M. Fraser, knit goods, Almonte, Ont., has improved the appearance of his mill by making a lawn in front of it.

The employees in the Dominion Cotton Co.'s mills, Moncton, N.B., recently struck to prevent the company hiring learners.

At Brantford, Ont., they are holding meetings to discuss the establishment of a carpet factory. The promoters seem confident.

Francis & Brazeau, Pakenham, Ont., are now running their woolen mill, which has just been completed. They will do a custom trade chiefly.

The Maritime Wrapper Company, St. John, N.B., is putting up a new building. Thirty-five hands are now employed, and fifteen sewing machines are in use.

The Rosamond Woolen Company, Almonte, Ont., closed down the woolen department for a couple of weeks last month. The worsted mill is still being rushed.

The new beavers now being produced by the Paton Manufacturing Co., Sherbrooke, are pronounced by competent judges to be not merely equal to, but superior to, English goods.

The Toronto Carpet Manufacturing Co. deserve a great deal of credit for supplying such a handsome Axminster carpet for the new Union Station. They were competing against the best English makers.

The proposed twine factory at New Westminster, B C., asks for a grant of five acres of land on Lulu Island water front, to be exempt from taxes for five years, and the guarantee of interest of the company's bonds to the extent of $10,000 for ten years.

The matters at issue between the Huron and Lambton Co. and the assignee of the Smith Bros.' estate in reference to the Sarn'a woolen mill property, have all been satisfactorily arranged, and the firm of Newton Bros. will carry on the mill for the season, says the *Sarnia Canadian.*

Letters patent have been issued to the Dominion Woolen Mfg. Company, Montreal.

T. Stockdale, Bolton, Ont., will weave carpets in Portage la Prairie this summer.

The Shelburne, Ont., Flax Co. applies for an Ontario charter. Capital, $40,000. Provisional directors, W. Jelly, J. McCue, R. A. Riky, W. Dyn'e, J. Madill, T. McKim and J. Barr.

Julius Singer, carrying on business as the Singer Ladies' Underwear Manufacturing Company, Montreal, is applying for letters of incorporation as a joint stock company, to be known as the Singer Ladies' Underwear Manufacturing Co., Ltd.

The Montmorency, Que., cotton mill is in full operation. The prospect of another factory being erected there this summer has caused the reopening of several hou.s that had been closed for some time, and sent up rentals.—*Saturday Budget, Quebec.*

The carriage, furniture, trunk, valise and book-binders' cloths, also shoe linings, manufactured by Dupont & Wilson, Kingston, are now sold direct to the trades interested. The Kingston oil cloth factory, formerly operated by Amey, has closed up, and their plant was bought up by the Dominion Oil Cloth Co., Montreal.

During the recent floods the manufacturers of Almonte, Ont., experienced some inconvenience, but little damage. Wm. Thoburn's finishing room was flooded, and one of the buildings of Cannon's factory, not working, was carried away. In Carleton Place the Gillies' Manufacturing Co. were compelled to close down for some days owing to the high water.

Jacob Kessler has become manager of the extensive flannel mills owned by Wm. Thoburn, Almonte, Ont. For the past fifteen years Mr. Thoburn has himself managed the business most successfully, and he now proposes to take a rest. It is proposed to enlarge the output of the mills and place more varied goods on the market if the demand warrents.

Howarth & Watson, the well-known manufacturers of paper cop tubes, are now bringing to completion their new building, which has been for some time needed to accommodate the growth of their trade. The new structure has a floor space of about 29,000 square feet, two stories and a basement, and is built with unusual care and very solidly constructed.

The Master in Chancery has given judgment in favor of the four employees who sued the owners of the Burritt's Rapids carding mill for work they performed for one Thomas H. Mills, who made a purchase of the property, but skipped to the States without paying for it or paying the wages of the men who improved the mill. The judgment was for $40, which they will get, provided the mill realizes that amount in excess of a prior claim of $2,900 against the property. This they stand a very poor chance of doing, for since the suit was begun a freshet has carried away the flume of the mill. The costs in the case are $400.

The annual meeting of the Canadian Colored Cotton Mills Company was held May 6th, in Montreal. A. F. Gault, the president of the company, presided. The annual statement showed that the profits for the year were $243,053.32. This sum for the most part had been used in improving the property of the company, and for this reason no dividend was declared. In the past four years the sum of $550,000 had been expended in new machinery, etc. In the election of officers and directors there was but one change from last year. This was the election of D. Morrice, jr., to the directorate, in place of the late R. L. Gault. The officers and directors for the ensuing year are: A. F. Gault, president; C. D. Owen, vice-president, and D. Morrice, T. King and D. Morrice, jr., directors.

The new yarn mill at Sherbrooke has been referred to in previous numbers. It is operated by R. B. Robinson and G. T. Armstrong, under the name of the Sherbrooke Yarn Mill Co. One of the proprietors was for about twenty years with the Paton Mfg. Co. The new mill is operated by water-power, has one set of cards and 416 spindles, and will do its own dyeing. It will manufacture hosiery and fingering yarns; and samples are now being turned out of imitation worsted yarns.

During the thunderstorm, on April 17th, a bolt of lightning struck the picker-room of the Almonte Knitting Co, and in a few seconds the inside of that room was a mass of flame, the electric fluid setting the wool and cotton afire. Fortunately the bolt burnt a piece of metal that held the sprinkling machinery in check, and almost as soon as the fire started the whole room was being sprinkled with water from the tanks above—a fine evidence of the usefulness of that system. A pail brigade was formed by the employees, and did good work, as did also the hose from the hydrants. In twenty minutes the fire was out, without any alarm being given outside the mill. The loss is put at $150, and is covered by insurance Had the fire taken place during the night it would in all probability have been much more serious.

FABRIC ITEMS.

Corrigan & Co., dry goods, Kingston, Ont., and Gananoque, have assigned.

W. J. Wollard, Berlin, has bought his dry goods stock back again at 60 cents on the dollar and has resumed business.

Lang, Morphy & Anderson, dry goods, Arnprior, Ont., are endeavoring to compromise at 25 cents on the dollar. Liabilities, $10,400.

Since January, 1893, S. L. Hunter has been in business as a tailor in Hamilton and has barely made a living. Now he assigns with small liabilities.

R. J. Tooke, Montreal, has now one of the handsomest men's furnishing establishments on the continent in his new store on the corner of St. Catherine and Peel streets, Montreal.

Alexander Murray, A. Murray & Co., dry goods, Hamilton, Ont., is advertising his extensive business for sale, and will retire into private life after a successful career of fifty years.

It is reported that the Clark Thread Co., of Newark, N J., the Kearney and Paisley Mills, of Scotland, and the J. P Coates Thread Co. of Glasgow, Scotland, have amalgamated.

The Alaska Feather and Down Company, of Montreal, P.Q., manufacturers of down quilts and down cushions, have moved their factory to 290 Guy street, at which place their office will also be established.

The heart of the commercial traveller is glad over the recent order to G.T.R. baggage handlers making them individually responsible for damage to pieces of baggage, and making dismissal consequent upon conviction of carelessnes.

The English Silk Association has enlisted the Prince of Wales in the cause, and he will wear figured silk vests, it is said, in order to promote the demand for home manufactured silks, and assist in driving the foreign product from the market.

Mark Warburton, the genial representative of the well-known firm of Mucklow & Co., is making his annual visit to Canada in the interest of "Mucklow's" dyewoods and extracts Mr Warburton, who is personally interested in some of the large textile industries in England, reports business "at 'ome" very good. The Dominion Dyewood and Chemical Co., Toronto, are sole agents in Canada for Messrs. Mucklow & Co.

An old-time hatter and furrier, at St. Johns, Que., M. Guillet, has surprised his creditors by asking them to accept 25 cents in the dollar, cash, on their claims, and investigation would probably tend to show that the estate would not pay as much if wound up. Mr. G. was supposed to be in fair financial shape, but it appears he has been living on his capital for several years past, his sales last year being less than $5,000, it is said.

A firm without an address, of which no one knows anything except that it advertises $580,000 worth of dry goods, which it could not possibly possess, is doing business in the circular issuing line throughout Western Ontario, says the *Shareholder*, Montreal Its alleged headquarters is McGill street, Montreal.

Wm. Thomas & Co., wholesale furriers, of St. Paul street, Montreal, have assigned. The assets comprise, in addition to stock in trade, two contested fire insurance policies, one for $2,166 in the British America Insurance Co., and the other for $1,533 in the Connecticut Fire Insurance Co. The total liabilities are some $1,600, and the principal creditors are A. Nelson & Co., $560, John Beiser, $329; F. McMahon, $281; A. Ramsay & Co., $101, Fred. Nash, $136; Joseph Ward, $175, Estate B. Keller, $179

THE advice of those manufacturing boiler oil injectors for feeding kerosene oil by the drop into boilers to prevent scale, corrosion, etc., is to use one pint of kerosene to 5,000 gallons of water, which is only one part oil to 400,000 parts water. The quantity of oil is, therefore, so minute that it volatilizes and passes off with the steam so that it is said there is no danger whatever in the dye kettles Kerosene oil will stop foaming as quickly as salt will put out a fire. The great trouble with many steam users is that they acquire the idea that kerosene oil is grease, and the grease causes foaming, by reason of acids and mineral properties in the water; when the facts are that kerosene is entirely a volatile substance, and is used largely by laundries to release grease.

CHEMICALS AND DYESTUFFS.

Trade is improving, but is not yet up to that of last year's business. The market generally is firm. The following are current quotations in Montreal:

Bleaching powder	$ 2 15	to	$ 2 35
Bicarb soda	2 25	"	2 35
Sal soda	0 70	"	0 75
Carbolic acid, 1 lb. bottles	0 25	"	0 30
Caustic soda, 60°	1 90	"	2 00
Caustic soda, 70°	2 25	"	2 35
Chlorate of potash	0 13	"	0 18
Alum	1 35	"	1 50
Copperas	0 70	"	0 75
Sulphur flour	1 50	"	1 75
Sulphur roll	1 50	"	1 75
Sulphate of copper	4 75	"	5 50
White sugar of lead	0 07	"	0 08
Bich. potash	0 09½	"	0 10½
Sumac, Sicily, per ton	65 00	"	70 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	2 00	"	2 10
Castor oil	0 07	"	0 08
Cocoanut oil	0 06½	"	0 07

LITERARY NOTES.

The Toronto Carpet Manufacturing Co. has issued a very neat catalogue of their well known weaves of Axminster and Ingrain carpets

The Massey Press is continuing its magazine very successfully, and *Massey's Magazine* for May presents a very attractive appearance Charles G D Roberts, Duncan Campbell Scott and E. Pauline Johnson are among the contributors.

The *Canadian Magazine* announces in its present issue that it has no intention of reducing its price to that of its new competitors The *Canadian Magazine* is adding hundreds of subscribers to its lists every month The story which Ian MacLaren writes for this publication is as fresh and interesting as ever. The Canadian writers help to make up what is generally pronounced one of the best issues of the magazine.

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the values, in sterling money, of the imports of textile interest to Canada, from Great Britain, during March, 1895 and 1896, and the three months ending March, 1895 and 1896:

	Month of March.		Three months to March.	
	1895.	1896.	1895.	1896.
Wool	£ 436	£ 84	£ 929	£ 3,382
Cotton piece-goods	46,196	48,742	182,632	186,839
Jute piece-goods	7,668	11,927	25,572	38,513
Linen piece-goods	14,501	12,633	49,313	57 681
Silk, lace	2,900	1,342	14,760	4,459
" articles partly of	2,658	2,013	7,850	10,033
Woolen fabrics	20,662	23,733	65,320	77,302
Worsted fabrics	47,392	60,979	161,947	188,192
Carpets	28,526	29,624	83,740	84,709
Apparel and slops	38,934	37,579	100,241	107,906
Haberdashery	19,703	15,475	51,579	54 872

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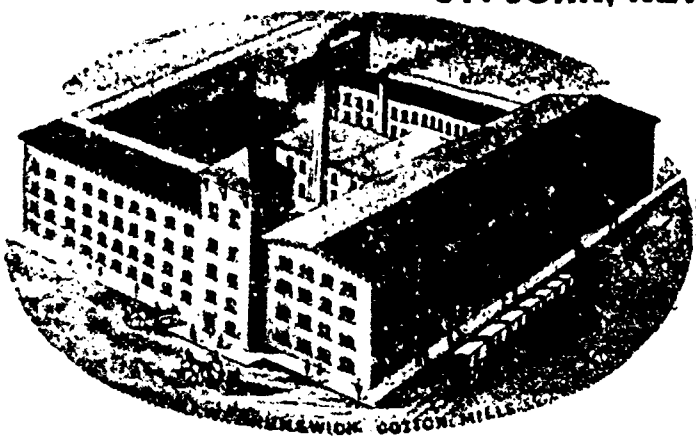

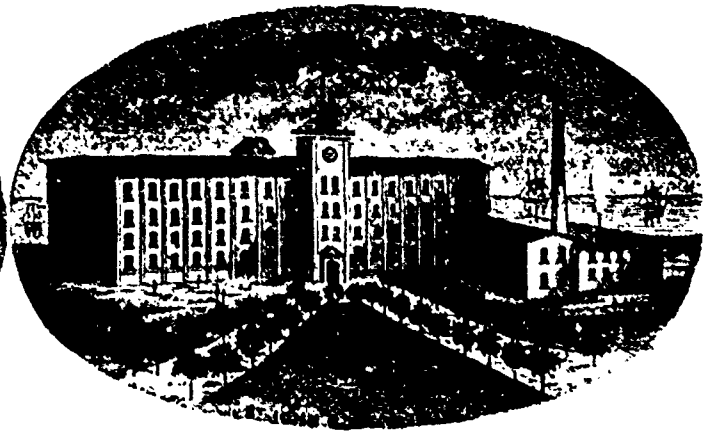

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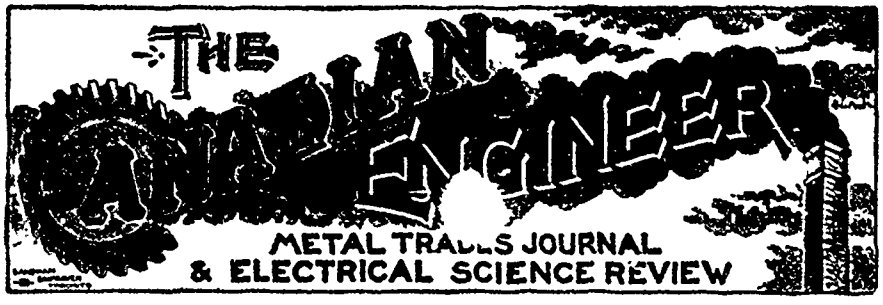

REACHING ALL BRANCHES OF PROFESSIONS AND TRADES INTERESTED

Published simultaneously in Toronto and Montreal.
Subscription, $1.00 a year.

THIS Journal is devoted to the interests of Civil, Mechanical, Electrical and Mining Engineers; Stationary, Marine and Locomotive Engineers, Sanitary Engineers and workers in the metal trades, Machinists and Iron and Brass Founders, and generally to Mill-owners, Manufacturers, Contractors and the Hardware trade.

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

CONTENTS OF MAY, 1896, NUMBER:

PERSONAL.

W. J Gordon, Almonte, Ont , has taken a position in a mill in Derby, Connecticut.

L. Shitner, of Galt, Ont., has accepted a situation as machinist in the Brodie Mills, Hespeler, Ont.

Jno. Marshall, wholesale hats and caps, London, Ont., died after a short illness at his home, on April 22nd.

D G. Gallinger, late of the Cornwall, Ont., woolen mills, is now second hand in Crown mills No. 2, Marcellus, N.Y.

L. H. Gault, son of the late M. H. Gault, of Gault Bros., Montreal, was married last month, in Scotland, to Miss M. A. Davidson.

W. H. Wyman, manager of the Corticelli Silk Co., St. Johns, is making a business trip to Manitoba, the North-West and British Columbia.

Robt. Sweeting, an employee at the Dominion Cotton Mills Co 's mill in Brantford, Ont., was caught in the shafting and instantly killed on May 8th.

Charles Munsen, aged 14, was caught in the driving wheel of the engine in the Palmerston, Ont., woolen mill, and so injured that he died shortly after, April 7th.

By the breaking of an elevator rope, J. Dewhurst and J. Hinton were seriously injured in the mills of the Paton Manufacturing Co., Sherbrooke, Que., April 16th.

W. R. Campbell, formerly with the Hawthorne Woolen Company, Carleton Place, Ont., has taken the position of overseer of the weaving department of the Globe woolen mills, Montreal.

R. Montgomery, of the firm of Cameron, Montgomery & Co., Paris, Ont., died suddenly May 3rd. Mr. Montgomery was one of the best known business men in the town, having been a member of his firm for twenty-five years.

Arthur Daniels, Brantford, Ont., foreman in the woolen mills, accidentally rode with his bicycle into the tail race recently. There was over eleven feet of water in the race, and Mr. Daniels was entangled in the wheel. He was taken out in a very exhausted condition.

Mrs. Adam Lomas, of Sherbrooke, Que., died last month at the advanced age of eighty-three. She was widely known and respected. Her late husband was the founder of the extensive business of A. Lomas & Son, woolen manufacturers, Sherbrooke, and her daughter is Mrs. A. L. Grindrod, of Sherbrooke.

WAVERLEY woolen mills, Pittsfield, Me., are just starting up two sets of cards, with Bramwell & Apperly feeds. Geo. S. Harwood & Son, Boston, supplied the feeders, also one of their improved high frame picker feeds.

THE largest sale of domestic wool to foreign manufacturers yet recorded has been consummated by the New York Wool Warehouse Company through a Boston broker. The shipment will consist of 1,200 bales, about 250,000 lbs., of fall Texas wool, and goes to Antwerp, Belgium. The wool was of a low grade, and net prices realized as about 7¼c. per pound. The wool could not be sold here at any reasonable price, owing to the depression of the woolen industry.

A FOURTH edition of the "Canadian Textile Directory" is now in preparation, and the book should be in the possession of everyone who is in any way interested in the textile or kindred trades of Canada. The third edition made a volume of 486 pages, and the coming one will be still larger. It will have some new features, which will make it even more valuable than ever in its special field. Inquiries relating to subscriptions or advertisements should be addressed to the publishers, Biggar, Samuel & Co., Montreal, Canada.—*Carpet and Upholstery Trade Review.*

SOME manufacturers in the United States seem inclined to ascribe the present widespread depression in woolen manufacturing to the importation of foreign rags. Although the term "shoddy" has obtained a rather obnoxious significance, because of old associations connected with the early use of what are now designated as mungo and flocks, yet a great portion of the shoddy now employed in woolen goods is a very useful article, and a blessing to mankind, because it enables people of moderate means to obtain excellent clothing at a far lower price than if the use of wool were not thus extended. The clothing made from good wool and good shoddy is also of much better quality than if cotton were employed to reduce the cost of the cloth, as would be the case if shoddy had not been invented. There is good shoddy and bad shoddy. It is not at all certain but that the use of shoddy has caused an increased use of wool in the United States and England. In these countries the consumption of new wool per capita is much higher than in most quarters of the world where cotton is mainly employed for clothing by the poorer classes, and silk by the rich.