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CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIII.

TORONTO, DECEMBER, 1896

No. 12.

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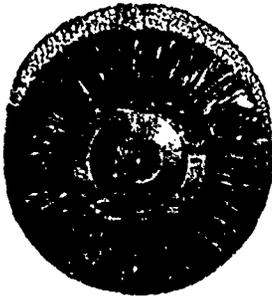
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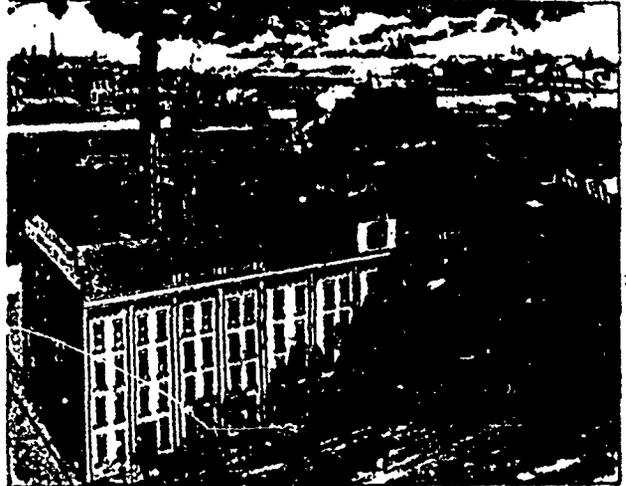
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Textile Trades of Canada.

Vol. XIII.

TORONTO, DECEMBER, 1896

No. 12.

Canadian Journal of Fabrics

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

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CONTENTS OF THIS NUMBER:

	PAGE		PAGE
Acid, Lactic	354	Merchant Tailors	364
Barbour Needlework	371	Mills, Among the	373
Chemicals and Dyestuffs	374	Packing Material, A New	343
Cotton Market	314	Peroxide of Sodium	343
Coal Tar Colors	355	Press on Free Credit, The	363
Designs, New French	362	King Frame, Its Possibilities, Ob-	
Dyes, New	366	jections and Advantages, The	365
Editorial	353	Scouring and Finishing	370
England and Germany	361	Slubbing Frames	371
Fabric Itens	372	Sodium, Peroxide of	363
Growth of a Maritime Province		Tailors, Merchant	364
House	364	Textile Tendencies	354
Industry, One St. John	389	" Design	362
Japanese Competition	333	" Centres, Foreign	367
Lace Industry Since 1893, The		" Imports from Great Bri-	
Irish	366	tain	370
Labor Question, A Russian Solu-		Water Hammer	367
tion of the	357	Wool Markets, The	373
Literary Notes	372	" Fibre, The Character of	360
Looms, Fixing	356	" Sales, The London	354
Maritime Province House, Growth		Woolen Market	354
of a	364	Yarns—The Manufacture of Fine	356

Editorial

THE STATE OF TRADE.

The uncertain, and to some extent unseasonable, weather of the past month has been very much against trade in the retail branches, but the indications are all in favor of a better spring trade. The wholesale houses report that orders of spring goods are on the whole much in advance of what they were this time last year, and in very few districts is there any falling off whatever. Manufacturers are feeling more hopeful, and as soon as the belief becomes general that the approaching tariff revision is not to be dreaded, an even more general revival of trade is to be looked for. In Canada

prices are moving upward, and though an occasional falling off may be noticed in some lines, it is only the wave motion of the advancing tide of prosperity, and general prices are found to be steadily rising nevertheless.

Japanese Competition.

We hear so much of the changed and changing conditions of trade that we are losing sight of the fact that there are economic laws underlying each passing phase of commercial development, which are as unchanging as are their manifestations various. The Japanese problem presents itself thus: A country possessing a temperate climate and products of the greatest variety, has a population larger than that of Great Britain. The people display an intellectual capacity and a power of perceiving the beautiful which is hardly rivalled by any other people since the ancient Greeks. When we add to such qualifications a patient industry which never tires, and habits of such simplicity that a whole family would live comfortably upon a sum which would hardly support a young child here, we have an industrial engine of immense force. Given such a supply of labor as this, what will be the result of the introduction of modern machinery and manufacturing methods? The answer appears at first glance to be unlimited production at prices which have no relation whatever to European or American values, the swamping of these markets, and in a great measure the destruction of the industries formerly supplying them. To reach this solution the most important factors of the problem are overlooked; it is assumed that the population will remain unchanged under an entirely new set of conditions. That such permanency is not to be looked for is proved by changes that have already taken place. The people no longer put their best efforts into everything they do. They have caught the infection of the "cheapness first" craze, and hence the Japanese equivalent for "made for the export trade" expresses a depth of contempt which indicates that such articles, even if low-priced, will not long keep the market which their apparent value at first secures them. But not only does the quality of the goods fall off, but the prices rise, because the population changes its habits and is not satisfied with the simple fare of other days. Already Canadian flour is the diet of the Japanese navy, and when it becomes the staple food of the whole popula-

tion, as it must, wages will rise and with them prices. Anything also which tends to raise the price of silver will also help in the upward movement of Japanese prices. Labor questions will also complicate the problem of cheap production, for the imitative Jap will not be long in initiating strikes and all the other features of a successful labor agitation. The difficulty of maintaining large factories, with their expensive machinery, in a country so subject to earthquakes, is also to be reckoned with as an element of increased cost of production.

Textile Tendencies.

Woolen Market.

Much of the present interest in the woolen market centres about the demand from the United States. The fact that a Protectionist policy is to be looked for from the new administration, has stimulated imports to a very marked extent. The temptation to speculate in imported wools, with a view to reaping the benefits of such an advance in price as ultimately must come through the restoration of wool duties, is so great that importers have been and still are cabling to all parts of the world for large quantities of all kinds of foreign wool, which are being rushed in to forestall tariff changes. American holders of wool, who are holding their stock out of the market in fancied security of reaping a handsome profit when the tariff changes occur, have little conception of the extent to which those to whom they ultimately expect to sell, are now supplying themselves with foreign wool. Some of the largest buyers have deserted the American markets, and are now in Europe. Broken tops, lap waste, and all such forms of highly purified wools, are being gathered up on American orders all over Europe to such an extent as to have already caused a scarcity and raised the prices. The effect of this stimulation of the market is seen in the opening prices at the last series of London sales, opening November 24th last.

Cotton Market.

There has been a most determined attempt on the part of the bulls to inflate the market. The best that they have seemed willing to admit was half a crop; but in spite of predictions, the shortage is not making its appearance as advertised, and prices have not risen as was perhaps expected a couple of months ago. The following comparison of spot cottons for the first week in December, in each year named, is interesting:

	1893.	1894.	1895.	1896.
Middling cotton	8½c.	5¾c.	8¾c.	7½c.
Standard sheeting	6¼c.	5¾c.	6c.	5½c.
Printing cloths, 64x64	3c.	2¾c.	3¼c.	2¾c.

LACTIC ACID.

The recent manufacture of lactic acid for commercial purposes—which reflects much credit on Prof. C. E. Avery—promises to work a revolution in the mills

and dye-houses, where chrome and tartar or oxalic acid are being used. It is claimed that its advantages over tartar are almost without limit. It causes the dye to fall on in a more level manner, looks far bloomier, and less coloring matter, as in the case of logwood, is required to get same results. In price it is considerably lower than tartar. Lactic acid is attracting the greatest attention among wool dyers on account of its great chrome-fixing and chrome-reducing power. These properties promise to place lactic acid in an important position as a chrome assistant for wool dyeing in the various branches, and also to make it a new and effective means for fixing the alizarine colors, which have a good reputation for fastness. It is used in co-operation with bichromate of potash. For logwood blacks, about one per cent. lactic acid with 3 per cent. chrome gives good results. For alizarine light shades, half per cent. lactic acid with half per cent. chrome. For medium shades, one per cent. lactic acid and one per cent. chrome, and for dark shades use 2½ per cent. lactic acid with three per cent. chrome. In the dyeing of wood extracts a more complete exhaustion takes place, also the wool has a softer feel and appears with a bluer, bloomier tone. As the chrome goes on at a lower temperature with lactic acid, it is perhaps not necessary to boil, except at the end of the operation. As means for fixing the alizarine dyes on leather, lactic acid promises to give excellent results. Up to the present this has not been done with any great success. A Yorkshire spinner says: "I find the net gain in spinning blacks on wool mordanted with lactic acid, over wool mordanted with sulphuric acid, averages three per cent. less waste." A Bradford piece dyer says: "On some goods I see a saving of 10 per cent. to 12½ per cent. logwood." A Yorkshire slubbing dyer says: "With logwood blacks, I save ten per cent. of wood by using lactic acid; even if this were not the case, I should still use it, because it gives such excellent results in softness and in bloom."

THE LONDON WOOL SALES.

The sixth series of London sales of colonial wool commenced 24th November, with catalogues comprising:

Sydney	2,279	bales out of an available total of 55,000 bales.
Queensland ..	2,665	" " " " 41,000 "
Port Phillip ..	2,725	" " " " 35,000 "
Adelaide	1,298	" " " " 14,700 "
Tasmania	—	" " " " 600 "
W. Australia ..	12	" " " " 1,700 "
New Zealand ..	1,291	" " " " 32,000 "
Cape	1,174	" " " " 17,000 "

11,445 bales out of an available total of 197,000 bales.

There was a large attendance of both home and foreign buyers and good competition, especially on the part of the home trade. Prices as compared with the closing rates of last series show on the average a rise of about 5 per cent. The advance shows itself strongest in good Australian grease, where it sometimes exceeds

the above figure, and least in superior scoured, which sell but little higher than in October. Crossbreds are also 5 per cent. dearer. Cape grease rule $\frac{1}{4}$ d., snow white $\frac{1}{4}$ d. higher.

The list was closed at 4 p.m. on the 20th Nov., when the fresh arrivals amounted to 164,982 bales (139,408 bales Australasian and 25,574 bales Cape). Deducting what has been forwarded direct, but adding the wools held over from last series, the total available amounts to about 197,000 bales. The Australian wools include about 110,000 bales of the new clip.

As the sales advanced American purchasers bought good greasy merinos freely, paying $7\frac{1}{2}$ per cent. above the closing prices of the last series. The purchases by German operators were larger. Cape of Good Hope and Natal wools were much sought for, and especially good greasies, and prices were firm, with a harder tendency.

COAL TAR COLORS.*

The second edition of the "Dictionary of the Coal Tar Colors," by Geo. H. Hurst, F.C.S., *Mem. Soc. Chemical Industry*, has recently been issued from the press of Heywood & Co., Ltd., 150 Holborn, London.

The coal tar colors are now so numerous, and the number of names given them by the various makers is so great, that a book of reference on this subject has become a necessity. In the Dictionary, brief descriptions of each color are given. A systematic account of the process of manufacture is not attempted; but as far as possible, the chemical composition, formula, method of making, date of introduction, literature relating to it, and its discoverer and the chief properties and uses of the colors, are given. Besides the descriptions of the coal tar colors themselves, brief accounts of other bodies which are of interest in connection with the subject are added, and a few special articles will also be found.

We quote from the introduction:

Since the year 1856, when Perkins first introduced his Mauve to the world, a very large number of coal tar coloring matters suitable for the dyeing and printing of textile fibres have been discovered by the indefatigable researches of chemists. These are derived from the many compounds which can be extracted from coal tar, and from this fact are commonly spoken of as the coal tar colors. The number of colors known to the chemist is very great. Some of these, which will be found described in the following pages, have been and are in use to an enormous extent in the textile coloring trades, in which industries they have to a large extent displaced the natural dyestuffs, since in their brilliance of tint, ease of application and fastness they present many advantages over them. Many coloring matters derived from coal tar have not come into use owing to a variety of circumstances. Want of brilliance of color, difficulty of application, or lack of permanence, are faults common

to many of them, and this last is a very great drawback. It has caused the rejection of many coloring matters which have been produced in the laboratory, and the withdrawal of not a few which were placed on the market in the early days of the color industry.

The coal tar colors may be divided into 16 groups:—

1. *Nitro Coloring Matters.*—Picric Acid, Naphthol Yellow, &c. v. NITRO COLORING MATTERS.

2. *Nitroso Coloring Matters.*—Resorcin Green, Gambine, &c. v. NITROSO COLORING MATTERS.

3. *Azoxy Coloring Matters.* There are few dyestuffs at present known belonging to this group, the characteristic feature of which is their containing the group $\text{—N}\cdot\text{O}\text{—N—}$, the nitrogen atoms being capable of acting as a binding group to two radicles. Curcumin is an example.

4. *Azo Coloring Matters.*—Aniline Yellow, Crocein Scarlet, Congo Red, &c. v. AZO COLORING MATTERS.

5. *Hydrazin Coloring Matters.*—These contain the group $\begin{array}{c} \text{—CN—NH—} \\ | \\ \text{—CN—NH—} \end{array}$ They are but few in number. Phenanthrene Red is the most familiar member of the group.

6. *Diphenyl Methane Coloring Matters.*—The few dyestuffs belonging to this group are derivatives of diphenyl methane, and contain the group $\text{C} \begin{cases} \text{C}_6\text{H}_4 \\ =\text{NH} \\ \text{C}_6\text{H}_4 \end{cases}$

Auramine is the commonest member of the group. They are essentially basic dyestuffs, and are in the main fast and therefore very useful.

7. *Rosaniline Coloring Matters.* Magenta, Violets, Blues, Brilliant Green. v. ROSANILINE COLORING MATTERS.

8. *Anthracene Coloring Matters.*—Alizarine, Alizarine Orange, &c. v. ALIZARINE COLORING MATTERS.

9. *Indophenols.*—v. INDOPHENOL.

10. *Oxazine Coloring Matters.*—Meldola's Blue, or New Blue, is almost the solitary representative of this

class of dyestuff, which contains the group $\begin{array}{c} \text{N} \\ \diagup \quad \diagdown \\ \text{O} \end{array}$ connected with a diad radicle on each side. v. MELDOLA'S BLUE, NILE BLUE, PRUNE, ETC.

11. *Thionine or Thiazine Coloring Matters.*—Containing sulphur in combination with two organic radicles. v. LAUTH'S VIOLET, METHYLENE BLUE.

12. *Eurhodine.*—v. EURHODINE.

13. *Azine Coloring Matters.*—Safranine, Magdala Red. v. AZINES.

14. *Induline and Nigrosine Coloring Matters.*—v. INDULINE.

15. *Chinoline and Acridine Coloring Matters.*—v. ACRIDINE ORANGE and QUINOLINE YELLOW.

16. *Artificial Indigo.*—Several methods of preparing indigo from compounds derived from coal tar products have lately been announced, but as yet, owing to a variety of circumstances, these methods have not come into practical use. The consideration of artificial indigo has not been attempted in this work.

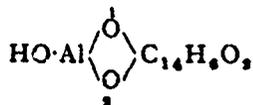
* DICTIONARY OF THE COAL TAR COLORS. Compiled by GEORGE H. HURST, F. C. S. Second edition, revised and enlarged. Pp 219; price, \$3.05 London: Heywood & Co., Ltd. 150 Holborn. Marsden & Co., Ltd., Mercury Works, Manchester.

Most of these groups will be found described in special articles in the body of the book. Even this classification cannot be considered as a permanent one, and there is no doubt that as time goes on and new dyestuffs are discovered a new re-arrangement into groups will be requisite.

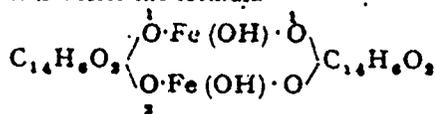
The question of the chemical constitution of the coal tar colors is a very interesting one, especially in so far as it relates to the cause of their color and in so far as it points out the influence the various elements, or the manner in which they are grouped together, has on the color and properties of the dyestuffs.

From the manner in which the coloring matters comport themselves when caused to undergo chemical action, and also from the methods of preparation of them, chemists have been able to recognize in them specific groups of elements or atoms, which in many cases impart to the color certain characteristic properties. Thus many compounds contain a group of three atoms, one of nitrogen, two of hydrogen, known as amidogen, and having the formula NH_2 . This group of atoms, whenever present, imparts basic properties. Again, the group OH gives, when present, what is termed a phenolic character, and the dyestuff requires a mordant to fix and develop the color.

Liebermann (Chem. Soc. Jour. Abstracts, 1893, 1, p. 511), suggests that the reason for only phenol and acid coloring matters containing two hydroxyl groups in the ortho position being capable of yielding colored derivatives with metallic mordants, is that only in this case is the hydrogen of the hydroxyl groups capable of combining with the hydroxyl groups attached to one and the same metallic atom, such as Al or Fe, or with hydroxyl groups attached to a double atom, Fe-Fe. Alizarin Red would have the formula



and Alizarin Violet the formula



This property of the orthohydroxy compound would be in strict accordance with their general behaviour, inasmuch as they so frequently undergo condensation with formation of ring derivatives. The properties of the metal are often masked in the color lakes which are formed, and this is explained by the occurrence of the metal in a closed chain of atoms.

FIXING LOOMS.

At the September meeting of the New England Cotton Manufacturers' Association, Alfred Hawkesworth, superintendent of the Merchants' Manufacturing Company, Montreal, read a most instructive paper from which we made some extracts last month. We continue: "A good loom fixer is an important hand in a weaving room. He should be a man of good clear judgment

and of even temper, for he will have his trials with his weavers as well as the looms under his charge. He should have a practical knowledge of weaving and know the difference that a close heavy weave requires from his looms when changing from light to heavy cloths and *vice versa*. He should likewise be a fair mechanic, and know how the parts of a machine should be adjusted to run smoothly. Loom fixing should not be done by rule of thumb, but rather upon certain lines of cause and effect. In a mill where goods are constantly changing from heavy to light and medium weights, he should adjust his loom to meet the conditions, and not wait until the weaver calls him for a smash or broken part of a loom or picker stick. This is the evil of loom-fixing—'waiting for the weaver.' A heavy weave requires a more accurate throw of the shuttle, more power on the picking arrangement, the harness straps adjusted with more nicety, the letting off carefully tightened to resist the more frequent and harder beat of the lay. The binders in shuttle boxes and the temples should be looked over; more will be required from them. The heel strap on the Stearns motion, on account of extra power, will require tightening, and the lugs will undoubtedly have to be drawn forward slightly. In changing to light goods the loom should be eased in every direction that the weave will allow. A lower whiproll will be necessary, for yarn will not require to be loose, and goods will weave even if it is kept just a little higher than the shuttle race. This seems lots of work for the loom fixer, but he will find it pays; he will get less calls from his weavers if he will take these things upon himself. He should never try to fix looms with an oil can. Looms should be regularly and systematically oiled, so that all parts will run easy. A good loom fixer will be interested enough in his work to occasionally study certain cloths he is weaving, and see that the proper tension is kept upon the warps as they are reducing in size. Narrow and irregular width goods are made by neglect of tension. He will also see that worn-out straps and cracked picker sticks are removed, as well as parts of the picking motion if they are much worn. He will likewise be slow to increase power upon his picking stick, and rather seek for some other way of running his looms than by the forcing process. A good loom fixer can be a very important factor in producing a superior quality of cloth from his section. He can also add to the product of such a section, but he must do it upon the lines I have mentioned. He must humor his looms, as it were, study each kind of goods he is making and give each the best chance it can get from the loom. Some men can, and all looms will do better if conditions are made favorable to their running at their best. A loom fixer can likewise run his looms cheaper if he studies their needs; he will have less breakage of parts, his harnesses can be made to wear longer than if they were carelessly hung with either too tight or too loose straps. If light goods are strapped too tight on cams, sheds will be larger than necessary, and both yarn and harness will suffer by friction. If

heavy goods are strapped too tight the loom will labor too hard at the time when the power of the belt is required to throw the shuttle. The rule should be to strap the harness to the cams proportionate to the goods being woven. A loom fixer should always use a washer under a nut when needed. He should not try to fix his looms with a hammer nor practice tightening small bolts with a ten-inch monkey-wrench. He should have a nice sense of the fitness of things. The binding of his shuttles for check in the shuttle box should be avoided. The heel spring and check strap should do considerable or nearly all of the checking; his shuttles will then come to rest without recoil. Cop waste is a great loss to a mill, and a loom fixer can prevent a great deal of it. One hundred Whitin, Colvin, Mason's or Lowell looms can be run at regulation speed for supplies, including shuttles and harnesses, for about \$400 per year, but they can be made to cost \$600. When sections cost more to run, as a rule there is less product and it is of an inferior quality. Sections should be run by the loom fixers and not loom fixers by the section. As manufacturers we should demand a higher order of loom fixers, so that we could rate them as good mechanics. We can wear out our looms in a few years if we choose, but while it is being done we are getting a poor quality of goods and a gradually lowering product."

A RUSSIAN SOLUTION OF THE LABOR QUESTION.

The idea of looking towards Russia for a solution of the labor question is not a familiar one to the Canadian mind. We are prepared to admit that the Russian knows a good deal about some kinds of labor—prison labor, for instance—but our impression of things Russian generally is that it is the last place from which to look for any good thing, where penal servitude for life was the reward of anyone suspected of thinking, and where there was nothing much raised but the taxes. In this we are wrong, however. The rural communities of Russia are carried on upon broadly communistic principles, and afford a fine example of the truth that even communism will not alter human nature.

There exists a remarkable system of mutual assistance and responsibility in the Russian artels, which might be very profitably studied by the labor unions of this free and enlightened continent. In the artel (1) each member has an equal share in the duties and work; (2) each member receives an equal share of the profits; and (3) all the members are mutually responsible for the work and conduct of each. As a rule women are not admitted; but women form their own associations, as in the case of the artels engaged in the cultivation of tobacco in the province of Tchernigoff, which consists almost exclusively of women, who elect their own elders and conduct their own affairs.

The wealthiest and best organized are the Exchange artels of St. Petersburg, so called because when the men forming them first assembled there, during the building of the city by Peter the Great, they had their headquarters where the Exchange now stands. There are

some thirty of these exchange artels, of which one was formed in 1714, and more than half were founded in the eighteenth century. Their present membership is about three thousand. They constitute two distinct groups—those engaged in the loading, unloading, and safe custody of merchandise at ports or railway stations, or in the town itself, and those employed as clerks or messengers in banks, commercial establishments, and the railway administration. To so high a degree are the artelshiks (that is, the members of the artels) considered worthy of trust, that often large sums of money destined for commercial transactions in distant parts of the Empire are entrusted to their keeping, the artel itself indemnifying the employer for any loss that may be sustained owing to the default or neglect of the member employed on the commission. A bank or commercial establishment cannot, however, enter into negotiations directly with an artelshik. These have to be arranged with the elder (starosta), who, with the secretary, is appointed annually by not less than one-third of the artel, and must himself arrange which member or members shall be employed on the work in question. Some years ago the gross annual earnings of the St. Petersburg artels represented the sum of £125,000. The consent of all members of an artel is necessary for the election of a new member, and a good deal of jealousy is shown as to the admission of strangers; but this is not surprising considering that the mutual responsibility of the members for damage or loss is absolute. The entrance fee may range from 6d. to £100 or more, according to the importance of the artel. It is forfeited in case of expulsion, but otherwise is returned with interest and share of the profits, when a member leaves, as he is free to do at any time. A strict supervision is kept over the work of each artelshik, and note is made should he be earning less than the proper amount, in which case he receives a proportionately smaller share in the division of profits. Fines, too, are levied for absence from work, unpunctuality, drunkenness, etc.; but, on the other hand, if an artelshik falls ill he receives all the same his share of the profits for one year, and his name is retained on the books for three years, when, in case of continued absence, his membership ceases. Four capitals are usually kept—a working capital, a reserve capital, a guarantee capital (in case large indemnities may have to be paid for unfulfilled contracts), and a charity capital (for sick pay, old age pensions, etc.). The division of profits takes place generally twice a year, but extra hands called in to assist the artel in case of an excess of work, when navigation, for instance, is opened in the summer, receive wages only, and no profits. One fault found with the artels is, indeed, that they are too much giving to "sweating" these assistant laborers. Besides the permanent artels in the large towns, there are many temporary ones in the country districts. Towards the end of winter a certain number of the peasants in a village or group of villages form themselves into an artel and elect their elder, who arranges with a contractor in a neighboring town for work to be done the following year. This is

commenced soon after Easter, and the contracts generally end in October, when the peasants return to the villages, where they pass the long winter in sleeping and wood-cutting. The work, whether harvesting or minding sheep, is paid for in hay or corn, which is sold, the proceeds being divided among the artelshiks. Artels are also formed for, among other purposes, facilitating the postal and conveyance service in Russia, for promoting cottage industries and for carrying on factory work, mines, etc. A Scotch house, engaged in the flax trade, did all its business through the medium of the artel (that is, loading goods, etc.)—thus the society supplying men on the following system; The men only work for the firm, and receive a small wage of ten roubles per month, equal to £1 sterling. There is a money artelskik who encashes money and is responsible for any mistakes made in cash transactions; a flax artelskik who attends to the arrival of flax; and a grain artelshik who acts in that department. Besides these men, this firm employ an office artelshik, whose duties are many and varied. He is the general servant of the place, cleaning the office, carrying all messages, etc. Should it happen that the artelshik makes an error in loading, or in any other way fails to carry out his obligations, the firm is at liberty to debit the society with the loss arising therefrom. On the same principle one can have a house artelshik if he cares to. The artel system is, undoubtedly, a wise arrangement for all parties concerned. Better work is performed, seeing it is to the interest of each individual to carry out faithfully the share allotted to him. Every item is performed with a punctuality that leaves nothing to be desired. Honesty is the very soul of the contract, and anyone failing in this direction would never be allowed to join the artel, or, if elected, would be instantly expelled when discovered. Britain might take an example from Russia in this respect, and even our trades unions, if framed on such a basis, would work more harmoniously and profitably for the interests of all those whom it may concern.

THE MANUFACTURE OF FINE YARNS.*

That the manufacturers of New England must now turn their attention to a more extensive production of the finer and higher grades of cotton goods is to-day very generally conceded. First, on account of the increased and increasing production of the coarser grades by the Southern mills; and second, in view of the fact that so many million dollars' worth of fine goods are annually imported into this country from over the water, by which latter fact we are forcibly reminded that there is for our Northern mills a large and comparatively undeveloped field for the production of finer qualities and more elaborate styles of cotton goods now coming from abroad, and for which we have to pay the foreigner. We know of no reason why our Northern mills cannot turn out any and every kind of cotton goods equal in quality, fineness and finish, to the best

and most artistic work of the spindles and looms of either England or Continental Europe. The ability to produce such goods cannot, of course, be acquired all at once. The fine spinner knows perfectly well that in every particular and detail he must have at his command, to enable him to spin superior high-class yarn, the very best machinery, good cotton, well trained, careful and attentive operatives, and, perhaps, most important of all, intelligent and skilful management. With all these advantages, however, in his possession, they will avail him nothing unless there be a most thorough and perfect system from foundation to roof, with a constant and continual daily and even hourly watching and controlling of the smallest and most minute detail. Common sense alone teaches that cottons of different staples or fibres in length, strength, diameter, and convolution, will not and cannot cooperate to advantage, nor can a uniform, level, and even yarn be produced when cottons of opposite characteristics are attempted to be worked together. To combine the highest quality in the product with the greatest economy of production, the cotton must be as nearly equal in length of staple as possible.

In mixing the cotton, it is imperative to make the mixings as large as possible—the larger the better, for the variation in the different bales is often quite considerable, and unless the cotton is thoroughly well mixed in large lots it is impossible to make a yarn of uniform strength and quality. A large mixing that will last several days, or even weeks, is a fair guarantee that so long as this particular mixing does hold out, the yarn spun therefrom will, so far as this process is concerned, be as regular in counts, strength and general uniformity as it is possible to make it. When making the mixing, as many bales as the room will permit should be opened out, brought forward, and placed round a square upon which the stack is to be built. A given amount of cotton from each bale should then be passed through the bale breaker, taken and spread out equally over the whole surface of the mixing, beginning at the bottom, and so on alternately, layer above layer, and should be trampled down exactly in the same manner as building a haystack. It is a common saying that one-half of the battle is fought in the mixing-room, and this is undoubtedly true.

As the capabilities and uses of all cottons are so very varied, and are now-a-days spun into all manner and numbers of yarn, to arbitrarily fix any narrow list of what any particular class of cotton should or could be spun into, would only be misleading and of no practical value. Speaking generally of the following three styles of cotton, viz., Peeler, Egyptian, and Sea Island, the writer's own experience in regard to the Peeler is that it is irregular in both length and strength of staple, besides being quite wasteful, and therefore it cannot be regarded with favor. Egyptian cotton has many and substantial advantages over any other cotton grown, and may be used with profit and success for so very many and varied purposes. It is strong, regular and clean, and altogether a most satisfactory and econo-

*Paper read by H. E. Walmley at a recent meeting of the New England Cotton Manufacturers' Association.

mical cotton to work. It is easily carded, being free from "nep." Generally, it is of a brown color, and of a fine and lustrous fibre. It bleaches well, and readily takes dye. For hosiery yarns it is well known for its superiority, and for fine woven goods it is in great demand. The price and all-round capabilities of this cotton place it in the very front rank as a competitor against all comers for so many branches of cotton spinning. Sea Island cotton is pre-eminently the cotton for fine spinning, and being the most valuable of all cottons, it is chiefly in demand for superior thread yarns, and for the production of the finest fabrics.

In spinning fine numbers, it is necessary to be most careful and particular about the temperature and humidity of the rooms. The heat should not be less than 80 to 90°, and the relative humidity not less than 65 to 75°. With the hygrometric conditions properly regulated, the practical results obtainable in any country should be the same, although not so highly favored by Nature, where the climate, as in Lancashire, is generally damp or moist. Of course, with the addition of humidity, the electrical condition is modified, and much of the electrical difficulty of a dry atmosphere is reduced to a minimum. Without fear of serious contradiction, it may be stated that we are to-day, in all parts of the world where the manufacture of cotton is carried on, practically independent of local atmospheric conditions, and furthermore are, through the aid of artificial atmospheres, practically and to all intents and purposes on an equal footing in all countries. Lancashire has long been regarded as specially favored by Nature in the element of an exceptionally suitable climate for the successful spinning and weaving of cotton goods, but we see to-day that even there they are universally equipping their mills with various devices for producing the necessary and desired humidity. With the means at our disposal of securing the necessary moisture, there is positively no reason why we cannot now spin as fine yarns as are spun in either Lancashire or France.

The following are particulars of an 80,000 mule spindle mill spinning 100's out of Floridas, Sea Islands, good fair quality yarn, combed. The machinery and productions given are to be taken as an approximate, subject, of course, to modification and revision as circumstances may require. Working hours, 55 per week, with 54 hours as the actual running time of the machine. The productions given are net, allowance having been made for lost time in piecing, doffing, oiling and cleaning, the lost time for these stoppages being roughly taken at 20 per cent. in drawing frames, 15 per cent. in slubbing frames, 10 per cent. in intermediate frames, 7½ per cent. in roving frames and 5 per cent. in jack frames. Eighty thousand mule spindles at 1½-in. gauge, 60 ins. stretch, average counts 100, at 19 hanks per spindle per week, or about 15,200 lbs. per week of 55 hours, from 18 hank, double roving Sea Island cotton. One or two openers with one porcupine and one beater. Two single beater scutchers. Seventy self-stripping revolving flat cards, 50 by 38 ins. cylinders, producing

about 275 lbs. per week per card. Six or seven sliver lap machines, doubling fourteen ends and producing about 2,750 lbs. per machine per week. Six to seven ribbon lap machines, doubling six laps and producing about 2,750 lbs. per machine per week. Sixty Heilmann combers of eight heads each, 8½ ins. laps, speed 85 nips per minute, producing about 275 lbs. per week per comber. Three to four drawing frames, six heads each, doubling six, and producing per machine about 4,150 lbs. per week. When spinning fine numbers (and by fine numbers is meant 100's and finer), it is of less importance to produce much than to produce it well. Nevertheless, it should be borne in mind that with proper care and diligence it is not only possible, but perfectly practicable, to get good high productions. The spindle point must be closely watched, as so much depends upon the out-turn in keeping down the cost of production, which in fine spinning is necessarily high. Spinning from 100's to 200's on self-actor mules out of Sea Island cotton, the process to be gone through is the regular system of passing the cotton through an opener with one porcupine, 800 revolutions per minute, and one three-bladed beater, 900 revolutions per minute. The automatic hopper feed should be attached to the opener, which greatly increases the regularity of the work, besides, of course, being a labor saver. The cotton is next passed through the finisher scutcher with one two-bladed beater, 950 revolutions per minute, doubling four laps. The speeds of the porcupines and the beater must not be excessive or as quick as for Egyptian cotton. A 30 lb. lap should not vary in weight more than half to three-quarter pound per lap, nor more than one ounce in three yards. Light and quick carding is recommended, but, of course, as in all other things, it needs modification according to circumstances. The weight recommended to be put through the card is from 450 to 550 lbs. Egyptian and from 150 to 350 lbs. Sea Island, according to the cotton and quality of yarn required, and for fifty-five working hours.

In the comber, from 10 to 15 per cent. of waste is generally taken out when working Egyptian cotton, and from 16 to 20 per cent. when working Sea Island. The object of the combing machine, as is well known, is to extract all the impurities and shorter fibres, so as to present for the subsequent spinning operations a cleaner, more regular, and consequently stronger yarn. The single-nip comber of eight heads is run at as high a speed as 90 nips per minute on Egyptian, and 85 nips per minute on Sea Island cotton. Combed cotton especially is ever subject to electrical disturbance, and it is astonishing how an invisible defect in metal will show in the mill with combed cotton in dry, cold weather. In double-combed cotton this is so marked that the cotton appears alive, rising and falling in the air without any apparent cause. While the work runs light or heavy, it should be met at the drawing frame and at no other machine should any changing take place to compensate for this variation in the weight.

Coming to the self-acting mules, the chief difficulty to contend with when spinning fine numbers is

slack winding. "Snarls" and "kinks" are a fatal defect in fine yarns and greatly deteriorate from its commercial value. All spinners or minders are prone to slack winding, and it therefore becomes the especial duty of the spinning master to exercise a constant vigilance in this respect, and as the spinner on fine work is far from overtaxed, he should be made to watch his winding all the time. To speak generally on the subject of fine numbers, it may be truly said that the principal difficulty is one of smaller details in the matter of cleanliness and smoothness, as pointed out; no doubt, according to climatic conditions, the setting of the rollers may require modification, etc. It may be well to state that a very slight variation in the regularity of the roving from yard to yard will make in these fine numbers an enormous difference to the numbers of the yarn. Thus, in 300's, a difference of 30 hanks is nothing at all unusual, and even an extreme difference of 50 is not remarkable. The difference between a successful and non-successful spinner of these numbers consists in avoiding these large variations. This can only be accomplished by great care in details. See that the rollers are equally covered as regards diameter; that the weight of the slivers and roving is frequently checked, and any variation compensated. Furthermore, it is advisable to have the wood bobbins of an absolutely exact weight, and then the bobbins should be weighed and classified, so that there shall not be a greater extreme variation than, say, 5 per cent.

It is scarcely necessary to say that the main element of success in this, as in all other spinning of good qualities, lies principally in absolute cleanliness. The finest numbers usually spun with success on self-actors are 260's; there are mules in France and England which are regularly spinning these numbers most successfully. There is, however, really no reason why finer numbers should not be spun, the only question being one of cost and the question of market. You cannot afford to spin very fine numbers on long mules, as, of course, the production is great on account of the number of spindles, and the market for very fine yarns is strictly limited. Another thing is this, that when people spin on self-actors they expect to make large cops, and in these fine yarns the cops will be seen on the spindle for days and days sometimes, and consequently the part that is on longest becomes soiled with the dust in the room, thus depreciating the value of the yarn. Of course the small hand mules can spin in small cops, and the mules having a less number of spindles are easily manipulated and changed. This, as stated before, is entirely on account of the limited market; and where there is a good demand for 300's, undoubtedly self-actors would crush the competition of the best hand-muled yarn.

THE CHARACTER OF WOOL FIBRE.

In an article in the *Dyer and Calico Printer*, Lewis J. Matos gives an analysis of the nature of wool fibre, which, though containing many points known to most of our readers, is nevertheless of sufficient value

to bear review. Wool fibre in general is of a somewhat complex construction, although when once viewed microscopically, it is never forgotten. It consists of an elongated, elastic, and pliable shaft, covered with scales, which overlap each other, and to which is due the property of the fibre to "felt" or interlock with other fibres of the same kind. The surface structure of the wool fibre is characteristic, and separates it from hair and fur, which, in other particulars, are related to it. The relationship existing between wool, hair, etc., is one of degree, and this is to be thoroughly understood before any attempt is made to state definitely the exact nature of the fibre under examination. It is well known that if sheep of high grade are neglected, subsequent generations are almost sure to be covered with a hairy instead of a truly woolly fleece. It is also to be noted that from animals of high grade, there may be obtained parts of the fleeces which have all the properties and characteristics of hair. Consequently, any off-hand assertion regarding the origin or identity of a sample of animal fibre is absurd.

The scales of the wool fibre have a greater free margin than the scales on hair. This is apparent if the two fibres are examined on one slide. To make such a mount in a satisfactory manner, the fibres may be scoured on a small scale, by shaking with a small quantity of neutral (castile) soap in a bottle for a few minutes, drawing off the liquor, washing well in water, drying on blotting paper, transferring to a little glycerine for half an hour, and then mounting in glycerine jelly as detailed previously.

The points to be noted are as follows: The scales on hair fibres lie closer to the shafts than on the wool fibre. What is termed a "core" is present in hair, and is popularly supposed to be an almost infallible indication of hair. Such, however, is not the case; this core is common in all kinds of animal fibres—in some more than in others; in some it is quite absent, even in whole fleeces, but it is to be regarded as a part of the fibre. In the lower grades of wool it is always present, and nearly always is made prominent by having much color in it; in fact, the dark wools and hairs are made so by the coloring matter held in just such a manner. The surrounding matter is nearly colorless.

Regarding the differences that exist between wool and hair, it may be stated that wool differs from hair by being usually more elastic, curly and flexible, and by possessing the surface structures above mentioned. There is no true line of demarcation between the two. In examining wool, fibres of a peculiar kind, quite devoid of any structure, are often encountered. They are horny in appearance, sometimes flat, and frequently with the "core" or central part occurring in segments. These fibres are the well-known "kemps," which are the cause of much trouble in the practical working of wool. All grades have them, although the coarser kinds have a greater proportion than the finer. The best method for examining wool is to treat a tuft with dilute solution of sulphuric acid (one in ten, or even less), which causes the scales to stand out prominently,

and thereby materially aids in identification of the sample.

The estimation of wool in a sample of cloth, consisting of wool, silk and cotton, is best done with a solution of the basic chloride of zinc, made by boiling 100 parts fused zinc chloride with 4 parts zinc oxide and 85 parts water, until a clear solution results. If the cloth be silk and wool, a weighed piece is immersed in a sufficient quantity of the reagent, whereupon the silk is dissolved quite rapidly, if heated, leaving the wool intact; this is rinsed in water, dried and weighed. If cotton be present in the sample, as shown by examination under the microscope, it will be left with the wool, in which case the residue, after weighing, should be treated with a 10 per cent. solution of caustic soda to dissolve the wool, leaving the cotton, which is to be washed, dried and weighed.

To remove and estimate vegetable fibres in a sample of cloth, treat with 3 per cent. sulphuric acid, and dry. The cellulose will be completely destroyed, and can be removed by a little shaking. In strong sulphuric acid cotton is dissolved; wool is but little affected, but silk is at once dissolved. If water be added the wool can be removed, washed, to remove the last trace of acid, and then weighed. A solution of oxide of copper in ammonia dissolves cotton and silk, but not wool. The following solvent is very useful for silk, leaving cotton and wool: 16 grams copper sulphate, 150 c.c. water, 16 grams glycerine. Treat this mixture with a solution of caustic soda until the precipitate formed is redissolved.

The analysis of raw wool is very important, and the method which the writer uses exclusively is as follows:—Moisture: Dry fifty grams (average sample) in a suitable oven at 100° C., and weigh. The best method to adopt is to put the wool in a tube of large diameter contained in the oven, and pass a current of dry air through while heating. Wool Fat: Extract the sample with ether, and agitate with water. The fat is in the ethereal solution, while the oleates are in the aqueous; both are separately evaporated to dryness and weighed. Wool: Wash with distilled water to remove other oleates, and mix with the aqueous solution above. Treat the wool with alcohol, and add the weight of the oleates thus extracted to those above. Decompose the earthy oleates remaining in the wool with dilute hydrochloric acid, remove the acid by washing, dry the wool and treat with alcohol and ether; evaporate to dryness, weigh, and calculate the earthy oleates. Finally, dry the wool carefully, and shake over clean paper to remove dirt, sand, etc. Wash on a fine sieve, dry, and weigh.

ENGLAND AND GERMANY.

LECTURE BY PROFESSOR BEAUMONT BEFORE THE
YORKSHIRE COLLEGE.

Professor Beaumont recently gave the introductory lecture of the twenty-third session of the evening classes of the textile department of the Yorkshire College. The

subject was "The German Textile Industry," and the lecturer observed that, amid all the prophecies concerning the decadence of British industries which German success had inspired, optimistic rather than pessimistic views might reasonably be entertained as to the future prosperity of the manufacturing arts of England. It did not follow because another competitor had appeared on the field that our trade and commercial supremacy should suffer. The resources of the skilled laboring communities of the United Kingdom were still capable of adjusting the balance of the trade in our favor. The development of the German arts and crafts practically dated from 1871, forming a natural sequence to the foundation of the German Empire. From that year the number and influence of the working classes had been substantially augmented. Necessity had coerced Germany into a policy of extending her manufacturing trades. Perhaps the extraordinary quantities of fabrics, amounting to £8,850,365 worth of woollen, £2,353,337 worth of cotton, £399,494 of jute, £378,301 of linen, and £122,141 of silk, we poured into that country in 1872 may have stimulated the German Government to foster industrial pursuits. Realizing that the productions of their factories could not compete in quality and price with those of Great Britain, a system of tariffs was created, which had been by far the most potent instrument for bringing about a decline in the exports of British yarns and textures to Germany. It was the application of these tariffs which had chiefly reduced our German exports from £15,896,679 in 1868, to £6,564,229 in 1894. It was impossible to judge of the comparative manufacturing capacity and skillfulness of Germany and Great Britain whilst these tariffs existed, except so far as to assert that, inasmuch as the Germans found them necessary, they admitted their inability to meet us on neutral ground. The textile industries ranked among the most important industries of Germany, and over one-seventh of the operatives given in the 1882 census were occupied in textile work. During the last fourteen years remarkable changes had taken place, the productive power of the weaving trades having been more than doubled. Manufacturing in Germany, as in this country, embraced the woollen, worsted, silk and linen industries.

In briefly describing the main features of each branch of weaving, and comparing in detail the textile imports and exports of Germany and England, Professor Beaumont stated that any inquiry into the causes of the success of Germany as a competitor with this country would be very incomplete if cognizance were not taken of the two great questions of wages and hours of labor. That the former were lower and the latter higher than in Great Britain was a well-known fact. A skillful spinner there earned from 9s. 8. to 14s. per week, whilst here the wages ranged from 21s. 10d. to 33s. 10d. It was similarly the case with the weavers of woollen fabrics, the German earning from 10s. 6d. to 14s. 3d. per week, and the Englishman from 13s. 4d. to 22s. 10d. An alteration in the value of the labor market in Germany which would make their craftsmen of equal money

tary worth to those engaged in English factories, would possibly have the effect of excluding German-made fabrics en masse from the English markets. Running parallel with the rate of wages there was the duration of the labor day, which necessarily very seriously affected the productive power of a body of operatives. Long working hours and meagre payments went hand in hand throughout Germany. In factories where day and night shifts were adopted those employed in the daytime labored from thirteen to fourteen hours, and the night workers from ten to eleven hours. The latter received the highest wages, with a view of inducing the men, who strongly disliked night work, to take their turns at the respective shifts. The general rule in spinning factories was a day of from twelve and a half to fourteen hours, with twelve hours' labor, and there were mills where the workers were constantly occupied from six a.m. to noon, and from one to eight or nine p.m. Some of the woolen concerns averaged a ten hour working day; others worked ten hours in winter and eleven in summer, and the third set from eleven to twelve hours all the year round, with from thirteen to fourteen hours in times of business pressure. One of the most important districts of fancy woolen and worsted manufacturing was Aachen-Trier, and the hours worked there might therefore be taken as typical of the general length of the working day in the best factories. There were in this district nearly 300 mills employing about 10,000 workers, one-third of which were occupied eleven hours in the day, one third ten hours, and the remaining third twelve hours, or even longer. The usual work time for adult artisans was from six a.m. to eight p.m., with one hour and a-half's interval for meals, making twelve and a-half hours per day.

Allusion having been made to the different associations, such as the Society of Craftsmen and the workingmen's committees, which have been established at several factories with a view of maintaining amicable relations between masters and men, the lecturer stated that the fact that over £2,000,000 worth of German fabrics should have been imported annually for the past few years into England need not be a matter for grave anxiety, when the wages and working hours in Germany were taken into account. It was more to the point that we should realize what was the exact capacity of the German manufacturer when stripped of these advantages. This might be estimated from the styles and qualities of the yarns and fabrics which he produced. Apart from the question of price, was he capable of making cloth finer in structure, more excellent in design, and better in finish than those producible in British factories? If he excelled in these essentials, our commercial supremacy in the textile industries was being severely assailed. The cheapest labor and the longest working hours combined could not prevent the precipitation of a serious disaster to British commerce in woven manufactures if in these matters the foreigner proved himself to be our superior. Low-priced work was no test of technical skill and productive power. In the woven fabrics imported from Germany we had ex-

amples of the standard of workmanship attained in German mills. These textures chiefly comprised low mantle cloths and cloakings, and limited quantities of dress stuffs composed of mixed materials, showing that almost invariably it was the price which caused these goods to sell in British markets.

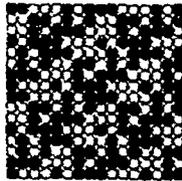
Viewed from this standpoint, there was an impregnable argument in favor of our industrial pursuits, for in all classes of fancy fabrics of a high quality, whether in woolen, worsted, cotton, linen, or jute materials, the manufacturers of the United Kingdom had scarcely felt the effects of German competition. Those concerns which suffered most, and which would be still further reduced, were engaged upon plain and coarse fabrics. If more progression had been evident in the flax trade of Leeds, it need not have been so near the point of final extinction as it was to-day, and it would invariably be found that where constant improvement and expansion did not take place the process of decay was at work. A new industrial country speedily acquired proficiency in the simple grades of textile production, and for this reason the keenest competition always obtained in the plain trades, but it decreased in severity as the higher grades of fabrics were reached, simply because the number of manufacturers capable of producing them has comparatively diminished. The policy, therefore, for British manufacturers was to develop and foster the higher and more skilful branches of weaving. For some years this had been done in the woolen and worsted trades of Leeds. Had Leeds manufacturers remained contented with the plain woolen industry for which the town was famous over thirty years ago, the weaving trade of the locality would in all probability have, ere this, become extinct. It was the enterprise, energy and genius of individual manufacturers which had changed the entire nature of the textile work of the district, so that now, instead of Leeds being the centre of the plain cloth trade, it was rapidly improving in reputation as the centre of fancy woolen and worsted manufactures for gentlemen's and ladies' wear. If throughout the country there should be improvement and growth during the next decade corresponding to that of the last fifteen years in all branches of textile work, from the preliminary process of factory routine to the finishing of the woven fabric, it was reasonable to anticipate that instead of the volume of our exports of fabrics diminishing, they would greatly increase.

Textile Design

NEW FRENCH DESIGNS.

In smooth-combed wool designs, says *Les Tissus*, stripes are much more numerous than squares. They offer more variety and also fewer difficulties. Several articles are still made in which the warp is clear and the weft dark. These show all the details of the design. These effects are produced by using the warp and dark weft. For example, the warping produces two clear

threads, two other threads, either clear or intermediate tints, or one clear, one intermediate; or two clear, one intermediate; one clear, two intermediate; one clear, one intermediate; or three clear, three intermediate, etc. Effects are varied by using as crossings small designs, spots, granites, plaited and various irregular intercrossings. The great part of these combinations is obtained by modifying the crossing from place to place, and most often in stripes. To make squares it is necessary to change the crossings transversely in the same manner as for longitudinal stripes. For the greater part one is contented to place light fillets of clear and lively colors, leaving a space of several centimeters, according to the size of the design, and to weave this fillet at equal distances. It varies but little in color—red, orange or blue. The grounds are composed thus: In the warp, white and pearl; in the weft, blue. In warp, white and hazel; in weft, maroon. In warp, pearl and mouse color. One can combine some gray colors equally.

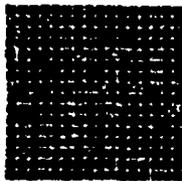


No. 1.

A, dark shade twist, composed of two threads at 687½ yards per ounce, 10 turns per inch; B, lively shade worsted, 687½ yards per ounce; 2-ply used as one; 3,700 ends; lay 74 inches in the reed; 12½ reed, 4 ends in a split; end shrink, 16 per cent.; rough finish to 58 inches; unclean weight per yard, 28 ounces.

Dress :
2 ends B,
82 dark A.
—
84

Weave :
2 picks B,
102 dark A.
—
104 picks in pattern, 50
picks per inch.



No. 2.

A, dark spun, 281½ yards per ounce; B, dark spun, 375 yards per ounce; C, dark spun, 218½ yards per ounce; dress with 1 dark A, 1 B, 1 C, 3 ends: 3,276 ends; lay 78 inches in the reed; 10½ reed, 4 ends in a split; end shrink, 18 per cent.; fleece, finish to 58 inches; unclean weight for one yard, 41 ounces; weave with A, 70 picks per inch.



No. 3.

A, dark spun, 343½ yards per ounce; B, light spun, 343½ yards per ounce; C, intermediate, 343½ yards per ounce; weave with C, 55 picks per inch; dress with

4256 ends; lay 76 inches in the reed; 14 reed, 4 ends in a split; end shrink, 24 per cent.; cloth finish to 56 inches; unclean weight per yard, 34 ounces.

Dress :

48 { 2 dark A,
2 light B,
4 dark A,
4 light B,
48 { 2 dark A,
2 light B,
2 dark A,
2 light B,
6 light B,
—
96 ends.

PEROXIDE OF SODIUM.

CAUTIONS TO BE OBSERVED IN USING IT.

The following report on the peroxide of sodium is printed in the monthly issue of the circular of the Boston Manufacturers' Mutual Fire Insurance Co. It has been kindly given to the mutual companies by the Silver Spring Bleaching and Dyeing Co, and is signed by W. H. Wooffindale, chemist of the company, and possesses an interest to those in whose works there may be dyeing or bleaching :

"Sodium peroxide (Na₂ O₂) is a solid of pure white color, becoming yellow on heating. Exposed to air it slowly deliquesces, producing sodium carbonate. It dissolves in water with production of much heat and a slight evolution of oxygen, probably due to local heating, but added to water in small amounts very little oxygen is produced. At temperatures above 150° C. it rapidly absorbs carbon monoxide with formation of sodium carbonate, carbon dioxide is similarly absorbed at about 100° C with the formation of sodium carbonate and evolutions of oxygen. It can be made by heating metallic sodium in air and oxygen, but the commercial article is made electrolytically.

"Lately it has come into prominence as a new bleaching agent for cotton, wool, silk, etc., and here the question arises as to what risk this chemical causes, and what precautions should be taken to regulate these risks.

"Under certain circumstances, this may become a very dangerous substance. By itself sodium peroxide cannot be exploded by concussion, friction, heat, or by detonation, and as the formation of sodium peroxide is not an endothermic reaction, the substance is not a compound liable to spontaneous decomposition. When water is added to it, there is much heat liberated and peroxide of hydrogen, steam and oxygen are evolved, but the decomposition has no tendency to spread, and is confined to the portion wetted. But, however, when the peroxide is mixed with, or even only in contact with, any combustible, the results are very different, and the substance becomes dangerous. In such cases, the combustible in contact with peroxide readily takes fire when the latter is moistened, and in case of an intimate mixture a violent explosion is liable to occur. When once the combustible has taken fire, a very fierce combustion results as long as any peroxide is left, the effect being much increased by the peroxide melting and setting fire to everything combustible wherever it flows. Sodium peroxide is, as is well known, a powerful oxidizing agent, but it differs from other oxidizing agents by the fact that its powers can arise both by fire and water, and this is what makes it dangerous.

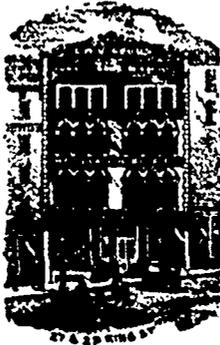
"From these facts it may be seen where the risks occur with this substance, and, although by itself it is not a dangerous substance under circumstances it may become so. With the above facts in mind, precautions should be taken in the storing and packing of peroxide. It should be packed in tight, strong metallic packages not liable to injury in handling, and should be entirely separated

from all combustible matter and stored in dry places. In its use care should be taken that none of the dry substance is allowed to get into contact with moist combustible matter.

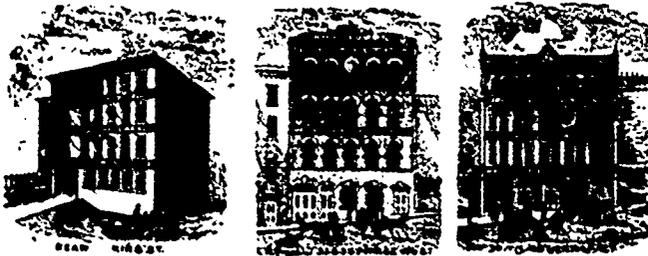
'As regards the bleaching by peroxide, I should consider that there was no danger, either from the solutions of peroxide or from materials after their treatment with the peroxide solutions'

THE GROWTH OF A MARITIME PROVINCE HOUSE.

Most towns have, so to speak, an individuality, and the cities and towns of the Maritime Provinces are no exception to the rule. Some are staid, and sober and prim; some are lively and bustling, some even reckless. Some are sleepy and seem solely created to enable fagged-out holiday seekers to dream away a month in happy repose and forgetfulness, while some are brisk and alert, up to date



in most things, and a little ahead of even the metropolitan cities in a few things. Of the latter character is St. John, N.B. It is not only a bright and brisk city, but there is an air of self-reliance about St. John which every Canadian city does not possess. St. John has been overwhelmed with fire and flood, and upheaved with financial earthquakes in its history, but it rises out of each calamity as full of hope as ever.



The merchants of St. John are as enterprising as those of any other city in Canada. Take the record of Manchester, Robertson & Allison, for example. Some three or four years ago THE CANADIAN JOURNAL OF FABRICS gave an illustration of the first humble edifice in which they opened business in 1866. They then had a floor space of 1,600 feet, now they have 105,000 square feet, and the accompanying are illustrations of the various buildings they



occupy. Since the last description of their establishments which appeared in the journal, they have acquired the wholesale dry goods building occupied by the late firm of Daniel & Boyd, and have taken in a large block facing on Germain street, but

directly connected with the main office block. By these accessions they have been enabled to enlarge several departments, and add new ones, among which is a department of stationery and fancy goods for small general stores, and a department of men's ready-made clothing. The Daniel & Boyd block is turned into a "wholesale package department." One of the admirable features of the Germain street building is a traveler's sample room, which is laid out on an original plan not equalled by any arrangement the writer has yet seen in Canada—or elsewhere for the matter of that. There are 560 bins ranged in tiers. These bins are allotted to the various travelers, who are known by numbers and not by names, and a plan of each tier is mapped out at the head of the range, with each traveler's relation thereto. The system of book-keeping is so simplified to correspond with this design that the travelers' order department works almost automatically.

MERCHANT TAILORS.

Some months ago we called attention in our editorial columns to the growing clothing trade in the United States and the large profits made by some of the houses there. Our trade is increasing, and last season undoubtedly saw a much larger turn over than any season yet, in spite of the dull times. Yet the merchant tailoring branch of the trade is not yet receiving the attention which it deserves. The *American Wool and Cotton Reporter*, in a recent issue, says: "The system of merchant tailoring has become a great factor in the clothing business of to-day, and while it has in many parts of the country usurped the position of the country tailors, it seems to be working side by side with the ready-made clothing business. The fact that many of the largest and best-known clothing houses are agents for one or another of the merchant tailors is proof positive that there is a demand for both. The clothier can do a custom business without investing a cent more capital and compete easily with the regular custom tailors of the town. This is a business that has sprung into existence within about 15 years, and has now grown to enormous proportions. To be able to have a suit of clothes made to order, according to your own measurements, sent by mail, is very alluring to many, and a trial of the business by one large concern in Chicago—the pioneers—proved that it was a ready source of profit, especially from districts far removed from the large cities, and people who had hitherto made their purchases of ready-made clothing from the local dealer, turned their trade over to the mail department of this house. The natural result has been to establish agencies in many of the cities, some in clothing stores and others exclusively for this business.

There are undoubtedly more clothing stores now who do than who do not have the agency of some one of the large merchant tailors. Advertising matter is furnished them, samples, measurement blanks, and in fact it is as near as possible the "royal road to business." They have the store, there is no extra help required, no investment, no stock of goods. It is an easy way to combine the two branches of the clothing business. A few years ago, when a large number of merchant tailors had sprung into existence in Chicago and New York, competition began to reduce price, and as a natural consequence the quality of the goods suffered, and some of the houses gave up this business, declaring that there was no profit in it, and that honest goods could not be made at the prices paid. This had a depressing effect for a time, but new business methods introduced by other houses gave it a fresh lease of life, and to-day the mail order department is a strong factor in the trade.

The first way in which these garments were made was by what is known to the trade as the "wholesale custom" method, that is, the house had a set of patterns to fit nearly all requirements in shape and size, and when filling an order, the cutter would select the pattern corresponding as nearly as possible to the measurements and depend upon the "knight of the thread and needle" to make it right. For instance, here is an order calling for 35½ inch chest; the nearest pattern may be 36, which is used, and when the garment is

made up, a little alteration will make it about right. This method is said to still be in use in some places, but the majority probably make a pattern for each and every suit, and never depend upon the hit or miss method of the other way. The first large house to establish this kind of a business in New York city was opened about ten years ago, although it had been carried on in a small way before that, and was already an established fact in Chicago. At first advertising was depended upon and brought trade from the rural districts. Our country cousin no longer depended upon the local tailor and his antiquated methods. Later a bid for trade was made in large cities, and for this purpose small stores were opened by agents, with a large line of samples, and at about the same time ready-made clothiers took agencies. They took orders, made the necessary measurements and sent them to the main house, receiving a profit for little labor, and gained new customers, who would undoubtedly patronize their furnishing departments to a greater or less extent.

The effect of this business on the ready-to-wear clothing trade has been often discussed, but while the low prices for which clothing could be made in this way was at first, and undoubtedly even now is, a source of strong competition, this very competition has a beneficial effect. The manufacturers have seen the necessity of keeping their goods up to date, stylish in cut and shape. As competition is the life of business, the one seems to do little harm to the other, and both lines feel the necessity of doing their very best for the consumer.

THE PRESS ON FREE CREDIT.

The *Shareholder*, of Montreal, thus counsels on the case: "In replying to questions from the creditors, he (Mr Ivey) endeavored to explain the cause of his difficulties to large losses through McKendry & Co., and McCall & Co., and to the condition of trade generally. He is reported to have said that he did not desire to blacken his country too much, but things out there were as bad as they could be. While Mr. Ivey may not have desired to blacken his country too much by his words, he had done so by his actions. This is shown from his statement to his creditors, in which \$23,194 of book debts are put down as likely to produce \$1,000, while of bills under discount amounting to \$97,400, at least 25 per cent would be dishonored and would rank against the estate. We hold that it is carrying on business in the manner that Mr. Ivey did that blackens this country. Such a statement as that submitted by him, together with his explanations, shows that his credits were reckless. In his anxiety to do business and stem the adverse tide, sales were evidently made without discrimination, the aim being to sell goods and take the chances."

There are lots of Iveys in business life who give credit without caution or discrimination, and yet though they may ruin themselves and cause immense loss to other people, they are allowed to resume business on the most easy terms. While in England Ivey secured a settlement at 8 shillings on the pound, payable 4 shillings in cash, 2 shillings in six months and 2 shillings in twelve months, secured. Now what guarantee have the creditors who let Mr. Ivey off so easily that he will not again do precisely that which has already forced him to compromise with his creditors? It is hoped he will be more careful as to his creditors in the future, but what does that amount to?—*B.C. Commercial Journal*.

A NEW PACKING MATERIAL.

A German shoddy mill manufactures at present a new packing material, which offers full protection against the admixture of jute fibres, dust, and other abominations during the transport of the wool, yarn, and waste, around which it is wrapped. It is a layer of strong paper and jute weave. An exchange says: "The packing of transatlantic wools in heavy jute covering, which, as is known, cover the outside of the wool with a heavy layer of jute fibres, no matter how carefully the bale may be opened, forces the manufacturer to adopt costly and time-consuming manipulations to pick out again these fibres, and many a cloth manufacturer has suffered serious loss and vexation. If these transatlantic wools are

of such a kind that they must be carbonized, the manufacturer can console himself with the thought that this process also destroys the jute fibres. This is very true. We send the wool, packed in jute covering, to be washed and carbonized, and receive it back cleansed of all vegetable stuff, but we successfully expelled an enemy out of a small door, and open the large portals for him to return. The original pressed bales were about three times as small when the wool was unwashed, but the washed and carbonized wool is sent back to us in nice large bales covered with jute, which often renders the work of carbonizing nugatory, as the wool is as fully charged with jute fibres as before.

THE RING FRAME, ITS POSSIBILITIES, OBJECTIONS AND ADVANTAGES.

W. H. Cook, of Brooks & Doxey, manufacturers of textile machinery, delivered a lecture recently before the Bolton and District Managers and Overlookers' Association, upon the ring spinning frame.

Mr Cook at the outset said that he did not think there was a single machine used in the process of cotton spinning which had met with such opposition and criticism on the part of English spinners as the ring frame. When he spoke of "English spinners" he referred to the whole of the people engaged in the industry. On account, however, of the ease with which the hands could be taught to work the frame, and the comparatively small amount of skill required to keep the machine in order, ring spinning since its introduction, some twenty-five years ago, had obtained very considerable success in foreign countries, and no doubt it was this success which had compelled English spinners to look at the machine and consider whether it was not one which they ought to introduce, so that they might compete with the yarn which was produced so much more cheaply than by the mule. The ring frame was undoubtedly making very great progress, and one of the principal reasons for this was that considerable improvements had been effected in the machine. There seemed to be some doubt as to who was the first to introduce this machine. It had been claimed for America, but having given considerable attention to the subject, he said the honor belonged to an Englishman named Bodmer, who lived in Manchester, and whose letters patent were taken out in the year 1824. For some reason Bodmer's machine proved a failure, and the idea seemed to die out, but in consequence of great difficulty experienced in America in obtaining adult labor for the cotton spinning industry, the machine received particular attention there, and in 1848 a patent was taken out by Jencks, of Pawtucket. This machine was introduced into England by the old firm of Sharp, Roberts & Co., but owing to the introduction about that time of the self-acting mule by Richard Roberts, it did not meet with the success it otherwise would have done. The machine was neglected until Samuel Brooks (Brooks & Doxey, Manchester) took the matter in hand, and having got the machine constructed upon proper mechanical lines, it has now become a commercial success. Having explained technically the construction of the ring frame, Mr Cook pointed to the success which had resulted from the introduction of ring spinning in India. In that country there were thousands upon thousands of spindles producing 44s weft from India-grown cotton, and the secret lay in the small diameter roller and in having humidifiers and ventilators, the latter securing the great advantage England enjoyed by reason of having a more humid atmosphere.

The objections were: First, that they could not spin as high counts upon it as upon the mule; secondly, that it did not produce as soft a yarn; thirdly, that the cost was much greater per spindle; fourthly, that more power was required for the same number of spindles, and, lastly, that they could not spin on the bare spindles and consequently were unable to compete with the export trade. Taking the first objection, he admitted that there was a certain amount of truth in it, as up to the present they could not compete successfully in this country for counts higher than 60's—not because they were unable to spin higher counts, but because when they got beyond a certain point there was not the same commercial

advantage with the ring frame as with the mule. As to the second objection, he said that with the same roving he would produce on the ring frame a softer yarn than could be secured from the mule. In fact, he could spin it so soft that they could not draw it from the cop in the shuttle while weaving, and he adduced evidence in support of that contention, also submitting samples of cops from the ring frame for the inspection of the gentlemen present. These samples, he said, would compare favorably with anything produced from the mule, and this had been brought about by the improvements made in the ring frame.

With regard to the question of cost, it was correct that greater power was required per spindle, but against that, he said, taking spindle per spindle, and pound per pound produced, it would be found that the ring frame had at least equal advantages in that respect. As to the last objection, and which was the most serious, that was of being unable to spin upon the bare spindle sufficiently well to compete with the export trade, Mr Cook said he had to admit failure up to a certain point. They had a frame upon which they could spin as well as with the mule, even in the higher numbers, but there was the difficulty of the two coils at the nose of the cop. If any one could get over that difficulty he would guarantee them a very handsome sum of money. This "snotty nose," as it was known in the trade, was the only trouble in regard to spinning upon the bare spindle, but considering the advances which had been made with the ring frame in recent years, he was confident that this difficulty would be overcome.

As a set off against the objections named, Mr Cook claimed for the ring frame that it could produce yarn at a much less cost than the mule. They could produce at from 15 to 40 per cent. cheaper than with the mule. That was for counts ranging from 36s to 40s, and he showed how this was a saving on the ring frame by one farthing a pound, which in these days of narrow margins in profits is an important matter. Up to 60s. he declared the ring frame had the advantage, but beyond that this advantage was lost. They also claimed for the ring frame that it spun a stronger and more regular yarn. There was a difference of opinion upon this matter, but he was convinced, from a very large number of experiments, that there was at least 50 per cent. in strength in favor of the ring. Then, again, it secured a greater production from the carding department, and there was less waste in cop bottoms. There was also economy of space, they being able to put down three ring spindles where only two mule spindles could be put. Again, they never heard of a ring mule taking fire, and the insurance companies insured a ring mill 50 per cent. cheaper than a mule mill. And further, they claimed that the ring only required skill on the part of the overtaker, in keeping the machine in order.

NEW DYES.

Azo Crimson L.—The widespread popularity of Azo Fuschine G and B, has led the *Farbenfabriken* to produce a new color, belonging to the same series, but possessing additional good qualities. Azo Crimson is an acid wool dyeing color, may also be used for half silk dyeing in a broken soap bath. This color is especially suitable for combination shades, and works level with Fast Green Bluish, Fast Acid Violet 10.B. and Orange 2.B., etc., producing many new and pleasing fashion shades. As regards fastness to acid, alkali and light, this color will give excellent satisfaction and so closely resembles the Azo Fuschines that for dyers who already have Azo Fuschine in their combination shades, it would scarcely be advantageous to change.

Double Ponceau R.—A new red and wool dyeing color, but somewhat faster to stoving than the former Ponceaus. This color is easily soluble and dyes very level, may be adapted to silk in a broken soap bath. In most respects this color resembles the ordinary Croceines, also in milling; but in fastness to washing it surpasses the former Ponceaus. In price it being somewhat lower, we expect this color will meet with a ready and willing demand. Pattern cards, samples and all information about new colors will be immediately forwarded on application to the Dominion Dyewood & Chemical Co., sole agents in Canada for the *Farbenfabriken*, vorm Friedr Bayer & Co., Elberfeld, Germany.

Alizarine Cyanine Green.—A want has been felt for a considerable period in the dye trade for an Alizarine Green of the usual fastness, and bright in shade and tone. This want is at last supplied by the *Farbenfabriken*, who are now placing on the market Alizarine Cyanine Green in paste or powder form. This new color dyes on a chrome mordant; excellent results are obtained by using chrome with lactic acid. It combines well with all the alizarine colors, but where depth of shade is required, and no brilliancy, Coeruleine Green will still hold its high standing. This new green may be also dyed in one bath with the aid of sulphuric acid, resulting shades being equal in tone, but nearly as fast as those dyed on a chrome mordant. The above colors are manufactured only by the *Farbenfabriken* vorm Friedr Bayer & Co., Elberfeld, Germany. For dyed patterns and samples, apply to the Dominion Dyewood and Chemical Company, Toronto, sole agents for Canada.

THE IRISH LACE INDUSTRY SINCE 1898.

The Irish hand-made lace industry was undoubtedly in a critical condition in the year 1893, on the death of Ben. Lindsey, founder of "The Irish Lace Depot," at 76 Grafton street, Dublin. This establishment dates from 1847, the period at which Flat Point, Carrickmacross, and in fact most of the existing Irish laces were introduced into this country. For fifty years Ben. Lindsey's depot was the chief, if not the only link between the Irish producer and the London and Continental markets. Trade, however, had been steadily growing worse toward the end of his life—partly, it must be admitted, owing to his obstinate reluctance to open his mind to new light on the subject of decoration and design; and when he died there was much reason to fear that this channel of business would be closed, with results of great injury to the industry, which was ill-fitted to bear up under the effect of any sudden and serious interruption. At this point, however, the Countess of Aberdeen, who had long taken a deep interest in this, as, indeed, in every other branch of Irish home industry, intervened with effect. She purchased from Mr. Lindsey's executors the stock, premises and goodwill of the business, and being then on the point of accompanying her husband to his Canadian viceroyalty, she gave the management of the business to a small committee chosen from among the members of the Irish Industries Association, and comprising the following well-known names. James Talbot Power, James Brennan, R.H.A., the Rev. T. A. Finlay and R. A. Atkins, with T. W. Rolleston, of the Irish Industries Association, as managing director.

Since then the record of the Irish lace industry has been, on the whole, one of advance and improvement. The downward movement has been decisively checked. The demand for Clones crochet, always an important article of commerce, has increased so much that at present it far exceeds the supply. The mechanical copying of degraded patterns which used to be so characteristic of this particular lace, is being at last in some degree overcome. New Ross crochet, and that produced (at present in too small quantities) at the school of the Congested Districts Board in Ardara, county Donegal, are particularly noticeable for taste and elegance of form. Clones is still backward in this respect. It must be observed, however, that a distinct preference exists in some quarters for the old indescribable sort of patterns in which no design is visible. "What I want," said a large Paris buyer once, "is a pattern like a shovelful of stones thrown on a road." These are sometimes asked for a "les dessins classique!"

In Carrickmacross lace much improvement is to be noticed. Centres have been formed in Armagh and in Ardee, in addition to that at Carrickmacross; and a great extension of employment has taken place at Crossmaglen. In reference to the latter centre an interesting experiment may be recorded. All who have any practical knowledge of the subject are well aware that the grand obstacle to improvement in this, as, indeed, in all the artistic handicrafts, is the difficulty of getting good designs. Following the tendency which naturally prevails in mechanical production, the movement in handicraft has been toward the specialization of industry. We have a class of designers who can do nothing but draw, workers who can do nothing but sew. The result is that we get any number of pretty designs which are

the despair of workers, or else commonplace and ill-drawn combinations of well-known forms put together by workers or local agents. With a view to remedying, in some degree, this serious evil, the Irish Industries Association selected an intelligent girl, from the county Monaghan, who was a skilled worker in Carrickmacross lace, brought her to Dublin, and paid her expenses for a full course of instruction in 'drawing and designing' at the Metropolitan School of Art. The results have been most satisfactory. She has now established herself at Crossmaglen as an agent and instructress, and is in touch with some seventy or eighty workers, whose productions, under her supervision, have markedly raised the average of excellence in this industry, and find an immediate sale. A similar project is now being carried out in connection with the Carrickmacross centre, and the best results may be hoped from it.

Limerick lace is, perhaps, the variety which shows least sign of improvement. This lace being particularly easy to imitate by machinery, has suffered very much from degradation of pattern and workmanship; and the lavish use of the tambour stitch prevalent at present, has, to our mind, a coarse and inartistic effect. Limerick lace of the old type, in which the filling of the figures was done by a stitch giving the effect of net applied on net, and the outline by a single run thread, had a graceful and piquant appearance, not often met with now. It is right, however, to say that Mrs. Vere O'Brien's small lace school at Limerick has done much to introduce better designs; and that excellent Limerick lace is made at the Convent of Mercy, Kinsale. We believe that the lace pupils at this convent learn drawing at the well-equipped school of art which is attached to it, a circumstance which must have the best effects on their work. A worker who attempts to reproduce a design without knowing how to draw is in the same position as a man who is set to copy a writing in a language he does not understand. Theoretically it may be possible to do both accurately, but practically mistakes are sure to abound.

Flat point, the queen of Irish laces, is naturally in less vogue than the cheaper varieties. Yet it holds its own fairly well, and some costly pieces have lately been disposed of, e.g., a flounce for 200 guineas (3½ yards), made at Youghal, and a hundred and twenty guinea piece from Kenmare.

Rose point, or as it is often called, "Inishmacsaint" lace, is not much in demand at present. An exceedingly beautiful fabric, it is too stiff and heavy to suit the present taste and style of costume. A lighter variety, however, is now being made both at New Ross and at Youghal, and two excellent specimens were shown at the last Horse Show, one of which (from New Ross) was bought by her Excellency, Lady Cadogan. This variety of rose point will have a future before it if it is properly marketed. Of the two pieces shown at Ballsbridge one was, we considered, much too dear, and the other much too cheap—the latter, indeed, as we have since ascertained, cost considerably more to produce than the price put upon it. This is not business, and without proper business principles neither taste nor skill can avail very much for the advance of any industry. One of our illustrations is a fine piece of rose point lace made at Inishmacsaint for the Irish Lace Depot—*Irish Textile Journal*.

It appears that the anti-benzene-pyrene mentioned some time ago as a reliable preventative of spontaneous ignition of cleaners' naphtha (petroleum-spirit or coal-tar benzene), essentially consists of oleate of magnesia, whereof as little as 0.01 per cent. in the naphtha attains the purpose. The corresponding lime and magnesia salt, if quite dry, are also soluble in hydrocarbons, and may be used similarly, but their efficiency is much inferior. The cost of this alteration in the dry-cleaning process is so small compared to the safety it affords, that it should nowhere be omitted. Since it has been fully understood that electric tension brought about by friction and electric discharges are the cause of benzene fires, the *Dyer and Calico Printer* states that some firms have furnished their cleaning machines with earth wires, a contrivance the efficiency whereof may from theoretical reasons be called into question.

Foreign Textile Centres

MANCHESTER.—Recent advances in raw cotton were based upon the belief which exists with some that the crop will not exceed 8½ million bales, but these are not the views of cotton buyers. Spinners quote slightly higher rates in many cases, although others would take the prices current for a short time past. There was a moderate amount of China business put through recently, but India is quiet. In the Burnley district a number of looms are stopped, and the production appears to be considerably in excess of the world's requirements. There is not over much comfort to be derived from the Indian rain reports. Now that exchange has fallen it will not be easy to make up for the drop in the rupee price of Lancashire goods, the supplies in the chief markets being rather heavy. Calico printers are fairly busy. The designs in bronze powder which have been shown lately in washable prints are, it is believed, of continental manufacture, British firms not having come up to the foreign standard in these goods. For next spring and summer there is every present indication that in the finest class of cotton fancy dress goods the leading idea will be an extended use of silk combined with cotton in stripe form, such, for instance, as silk stripes, woven satin upon fancy armure or leno grounds, and an extensive use of tinsel or metallic threads. The difficulty is to get the metallic thread, of whatever it may be composed, to withstand the action of bleaching or dyeing. By improved methods, however, this will be overcome, and we shall, it may be expected, very soon see a much extended use of tinsel or metallic effects in woven goods of all kinds. To some extent this is already noticed in new French silk fabrics of the finest class. It is tolerably certain that the metallic effects will next year be seen in brocaded sateen cottons, in stripes and all-over leno and lace cottons and in velveteens, both printed and unprinted. In the latter class of goods the material was used to some extent a few years ago, but, for some reason or other, it did not take on as was anticipated. In the more ordinary styles of cotton dress goods there is most to be noticed in the leno branch. There has been some grumbling lately as to cutting prices in this branch, but this, of course, is all for the public advantage, and perhaps the goods will be a shade cheaper in consequence. Some astonishingly neat and effective patterns are now being produced in this class of goods, patterns which only a few years ago would have been considered impossible at the reasonable prices charged.

OLD M.—A number of local spinning companies continue to throw out their old machinery and replace it by new, while others are having their machinery thoroughly overhauled and improved. Playing four warps is common at weaving concerns in this district. At one mill nearly one-half of the looms are stopped, and three-loom weavers are standing with one loom, while others are stopped entirely for weeks together. Short time is also being worked.

LEEDS.—In Leeds the clothing factories are benefiting from the finer weather, and there have been more orders both for overcoatings and suitings. Business in the warehouses is also reported to be improving. There is still a good demand for waterproof garments, and the factories employed with these goods are all very busy. In the heavy woolen districts, although the makers of light woolen for ladies' wear are well employed as the season advances, the makers of heavy goods are quieter, and the expected demand for woolens for the United States is still scarcely in evidence. There is a confident tone as to the future, and manufacturers do not care for repeat orders at former prices. Sales of assortment parcels of winter goods have been made on old terms. Heavy overcoatings are a slower sale than usual so late in the year. Presidents and beavers are strong, and tweed and chevots form the bulk of the fabrics now in preparation. Mixtures and birds-eye meltons are fair in demand, but all-wool qualities are scarcely asked for. A few small American orders are to hand. Continental trade is as last reported. Shipments to Australia and the Cape keep satisfactory. Because of the famine a good many new Indian orders have been

cancelled. Inquiries from Japan are numerous, and the outlook with China has never before been so good.

Huddersfield.—In Huddersfield business is certainly no worse, and in addition to an improved demand for spring woollens and suitings, there are distinct signs of a better call for worsted coatings for both the home trade and America at an early date. Makers of blankets and rugs are not getting as many new orders as they did, but are still well employed, and should soon be getting some new season's shipping orders. The Yorkshire flannel makers have had a fairly good season, and up to the present have been able to run without increasing their stocks. A feature of this season's trade has been a revival in the demand for cheap scarlet flannels, and also a large growth in the demand for finer makes of very cheap all-wool white flannels. Clothiers are busy getting out the remains of their winter orders, but report new business quiet, except from the mining and shipbuilding districts, which are very busy. All classes of rubber goods are in great request, and the factories where these garments are made are extremely busy. There is not much movement in linings for men's wear goods, and some season's goods in low fancy checks have begun to be jobbed off.

Bradford.—The last colonial wool sale of the year has now opened in London, and will quickly test the reality of the present advance, and also the possibility of still further upward progress. Since the conclusion of the last sale series several things have happened, and the general tone of the wool market has greatly improved by the result of the American Presidential election, and prices may be said to have already gone up some five per cent. It is too early to predict what the course of things will be to the end of the present sale series, but there are the strongest reasons for expecting that both competition and prices will improve. This view is much strengthened by the latest news from America, to the effect that a specially early session of Congress will be arranged by Mr McKinley, in order that a high tariff bill may be pushed through as soon as possible, so that the time for getting in goods before the increased duties would be much shorter than was expected would be the case, and, consequently, the busy time begins at once. Fine merino wools form a considerable portion of the present sales, and the new fast boats are every year getting in a larger proportion of the new clip, which used only to arrive in January. The trade here in these fine wools during the past week has been quiet, as holders were not anxious to push business until after a standard had been fixed in London, but prices are very firm, and large operations could not be effected in this class of wool even as well as a week ago. Very large sales of fine wool tops have been sold forward, and wool combers are all very busy indeed. In crossbred colonial wools there is no great amount of new business, but spinners have all bought so largely that some time must elapse before their orders are completed. English wools, both of a bright and of a non-lustrous character, continue to be to some extent neglected, but I hear that there is a better inquiry for low carpet wools, which are likely to be wanted for America. Mohair and alpaca are quite firm at unchanged prices, but as the greater part of this year's clip has reached the consumers' hands, there is no chance of large sales of the raw material. The worsted yarn trade is for the moment quiet, as only small orders are coming to hand on export account, and these have been already provided for by merchants, and our home manufacturers have also supplied their pressing needs in regard to yarns. In piece goods business is distinctly quiet, and the tone of this trade is rendered more flat by the disappointing nature of the autumn dress goods trade, in which reports have been unusually scarce, either on account of the wet season or bad harvest, or both combined. The state of internal commerce in the United States has this year been so bad that business cannot become good all at once, and it is now too late to get anything but regular plain dress goods round in time to catch the spring business of 1897, and goods for the autumn trade in America need not be shipped before next July, so that the new business actually coming to hand on American account has not up to now been large. There is, however, amongst our manufacturers here a most confident feeling as to the next spring season's home trade, and some makers of novelties are well under order for that

season. In printed silks, the neat chine styles of last season have given way to more elaborate effects of a floral character. There are some very pretty new black and white styles in minute stripes and checks, which, although neat, are very stylish.

Rochdale.—There has been no change in the condition of the flannel market recently, and trade remains very quiet for the time of the year, repeat orders being of meagre dimensions. Some manufacturers are, however, busy on old contracts still. The wool market is decidedly against manufacturers, whose prices have kept the same, notwithstanding the advance in raw material.

Nottingham.—The revival of American business, of which we heard so much on this side since McKinley was chosen for President by the American people, and which really seems to have struck a number of English industries, has not been felt here. We have, however, had a number of American inquiries, and a really brisk business on that account in the laces preferred by the American consumer would seem to be only a matter of a few weeks or even days. When it comes, the revival will be welcome, for with most markets just now there is considerable dullness. The orders on hand for the Continent are limited to a few specialties, and agents scattered over the home centres of distribution and consumption are sending in somewhat indifferent reports. The best feature of the situation is that there are some respectable orders on hand for the colonial and a few other far distant markets. Manufacturers are at this moment paying particular attention to the preparation of pattern and novelties in various departments. Black lace is taking the place of Valenciennes as a trimming for underwear; and the batiste chemises worn lately are trimmed extensively with embroidery and platings. Braid trimmings from 2½ to 3 inches wide are being taken up well. Lace insertions are largely used with crepe lisse ruffles. Ecru as a color promises to become popular again. In curtains, plain centres with borders from 12 to 16 inches wide are likely to become common. Neither silk nor cotton millinery laces are being taken freely by the home trade. Cotton embroidery trimmings for underwear are languid, and considerable machinery is only partly occupied. Bobbinets and plain tulles continue healthy and are fetching top prices. Stiff foundation nets and millinery tulles are a trifle languid, but there is so far no reduction in prices. Curtains, window blinds and furniture laces are being turned out in large quantities, but sales are not large—at least for immediate delivery. Stocks are rather large. Makers of these goods are likely to be busy in a month or two, if only on goods ordered for late delivery. Manufacturers of caps, aprons, collarettes and ruchings, though not fully engaged, are doing a fair amount of business. Cotton hosiery is depressed, but merino and cashmere goods are in demand, and are firm in price; while fancy half-hose merino vests and natural-wool combinations are dearer, and are moving well.

South of Scotland.—There has been no great improvement in the South of Scotland tweed districts. Some firms are being well employed, but trade as a whole is below the average at this season of the year. It is hoped the advance in wool will help business a bit. Makers are now showing their new ranges. A quiet tone prevails in the Glasgow cotton yarn market, and rates are slightly under those current last week. Buyers are simply supplying immediate requirements.

Kirkcaldy and Dunfermline.—The Dunfermline linen trade is showing signs of improvement. The home orders have been much better of late, and the American demand is brisker. Manufacturers do not anticipate a boom; they think the trade with the States will be a gradually increasing one. There is steady employment in the linen industry at Kirkcaldy. Floorcloth and linoleum manufacturers are unusually busy, there being a good demand for all kinds of cloth. In some departments overtime has had to be resorted to.

Belfast.—The market is without much alteration, but very firm in all branches, with a full turnover. Trade with the United States is steadily expanding. Orders are coming forward pretty freely, and for fair quantities. The European demand is rather more than supported. The home trade is keeping up very well;

orders for finished linens are being placed on a liberal scale at recent full rates. Brown cloth is going steadily into consumption, and more might be done if manufacturers were inclined to book. Prices are very firm. Yarns are meeting with well sustained inquiry, and sales continue large. Prices nominally unchanged, but any further increase in buying would make them advance.

ZURICH.—Buyers are in the market, but their presence has not made business lively. Prices they offer are too low and are acceptable only when manufacturers are anxious to sell their goods at any cost. Business with the United States is improving, but not to the extent that might have been expected from the result of the election. With London the business doing leaves room for improvement. The experience of the recent past has not encouraged manufacturers in producing extensive lines of novelties. These are scarce and hard to find in desirable styles, so that buyers have more or less to limit their operations to the more staple goods. In surahs, merveilleux and taffetas some fair-sized lots have changed hands, but at unsatisfactory figures. Changeable taffetas have been ordered for future delivery.

CREVELD.—The feeling in the silk goods market has improved. This improvement is not great, but after so many months of slowness and expectation even this is welcome. Buyers, wholesale as well as retail, are showing more disposition to operate for the future. These orders are not for heavy quantities, but they show at least what are the views of buyers in regard to future styles. The delay in placing orders may be partly attributed to the uncertainty about the coming styles. This uncertainty seems to have disappeared, and after all no important change in the fashion is likely to occur. Buyers have so far favored taffetas. Changeable taffetas, fancy effects on taffetas, armures and taffeta have been ordered. Damasses have also been the object of buyers' attention. With the other fancies are also included fancy effects on velvet, which have been fairly well ordered for future delivery. Business for export has improved and conditions generally are becoming more favorable. The industry is now inclining towards an increase in production, which has already commenced, more activity being noticeable in the production of dress and trimming silks. In other branches activity is fair. The good season which umbrella silks have had is likely to continue, orders having been placed for novelties for next summer. In tie silks new orders are not plentiful, but manufacturers have sufficient work on hand. In ribbons the situation is not very bright, and in silk ribbons there is room for improvement as far as production is concerned. Velvets are in fair demand.

CHEMNITZ.—Trade in hosiery is fair. Orders are coming in freely, and buyers in town are trying to secure goods at prices paid two months ago. This they find difficult, especially as the leading numbers in fine-gauge hosiery have gone up as much as 20 per cent. If trade picks up to the extent expected goods will cost still more money in a few weeks, and even if this hope should not be realized there is no prospect that prices will be lower before the season is over. Orders call almost entirely for Hermsdorf black, only about one-quarter being taken in tan shades. In the tan assortments shades vary from the very lightest to almost a garnet, but medium dark shades are the most used. In fancy hosiery Persian stripes are preferred to the old plain-colored stripes. Embroidered hosiery are also selling freely, especially in the better grades. In gloves business is still dull, and the manufacturers use this lull to finish their lines for the coming season, which will soon open up.

WATER HAMMER.

SOME EXPERIMENTS TO SHOW WHEN IT MAY OCCUR

A report of some experiments upon the causes of steam-pipe explosions, made to the British Association for the Advancement of Science, shows under what conditions water hammer may be expected in steam pipes and under what conditions it becomes dangerous. The tests were made upon steam pipes six inches in diameter and .197-inch thick. The ends were closed by flanges and provided with drain cocks and air-relief cocks, and suitable pressure gauges that would record to 2,133 pounds, one on the end flange

and one on the top of the pipe. The pipe was inclined upward, and entering the bottom flange was a steam pipe with a valve so that if any water was in the pipe the entering steam must pass through it.

The second experiment was conducted upon 12 inch pipe, one-quarter inch thick, with four pressure gauges, steam being supplied at the bottom through a three inch pipe. The position of this pipe was afterward considerably changed. The tests made were as follows: 1 Pipe without water, air cock closed and the drain cock open. 2 Pipe without water, air cock open and the drain cock closed. 3 Pipe without water, air and drain cocks open. 4 Pipe without water, air and drain cocks closed. 5 Vacuum in pipe and some condensed water formed by creating vacuum, air and drain cocks closed. 6 Vacuum in pipe, and the latter filled with water to about one-third of its cubic capacity, so that the point where the steam entered was under water in the first pipe, it being made to incline toward that point. In the second pipe the water filled the bottom of the pipe. Air and drain cocks were closed to one third of their capacity at one end, and running to nothing at the other end. 7 Pipe without vacuum filled with water as under 6, air and drain cocks closed. 8 Pipe without vacuum filled with water the same as under 6, air and drain cocks open.

In the experiments with the first steam was admitted from a boiler under 70 pounds pressure, by rapidly opening the stop valve on the main steam pipe, the influx of steam having been regulated beforehand by adjusting the valve close to the experimental pipe. Beginning with one-fifth of the area of this valve, the opening was increased one-fifth in each of the succeeding tests, the whole tests being frequently repeated to check results. In carrying out tests 1 to 4 no motion was observed, whether the filling of the pipe with steam was retarded or accelerated. The pipe became heated slowly or quickly, according to the rapidity with which it filled with steam, until it became thoroughly warmed, and the pressure gauges on the pipe showed same as boiler. As soon as vacuum formed and a small amount of condensed water was present in the pipe (test No. 5), light hammering was present in the pipe when steam was admitted. This was not, however, indicated on the gauges, but caused a slight movement in the pipes. This hammering and backward and forward movement of pipe became more intense the greater the quantity of water present (tests 6 and 7), manifesting itself in distinct blows at short intervals, and causing the gauges to show between 126 to 242 pounds. Whether the vacuum in the pipe (test 6) had any influence on the action of the steam when admitted, could not be determined by any of the trials.

The heaviest hammering, as well as the greatest movement of the pipe—which also continued for some length of time—were observed when the pipe was about one-third full of water, and both air and drain cocks kept open (test No. 8), and for all five openings of the valve. During these tests there was a uniform discharge of water from the drain cock and of air from the air cock, for a longer or shorter time, depending on the opening of the stop valve in the pipe. For instance, with one-fifth opening of the stop valve the first hammering was noticeable after four minutes, at three-fifths opening, after 30 seconds, and 15 seconds after the valve was wide open, powerful hammering and violent motion of the pipe set in, in each case accompanied by an impulsive discharge of water and air, the latter by steam from the air and drain cocks. These phenomena are due to the fact that the steam is condensed by the water present, and only when the water has attained the temperature of steam does the impulsive action of the latter set in. The pressures observed on the gauges at the end of each trial (test No. 8) fluctuated between 284 and 1,666 pounds. At one time the greatest pressure would be observed on the gauge tapped in the flange at end of pipe, and then on the gauge on side of pipe.

The second experimental pipe was changed somewhat from time to time, but showed no radical change in results.

As a result of these tests it is shown that destruction of a completely drained, though entirely cool, pipe cannot occur, whether the stop valve near the boiler under steam is opened gradually or in a sudden, careless manner, because hammering, which alone can cause an explosion, does not follow. But it is to be observed that

a rapid filling of the pipes with steam may prove disastrous, for the sudden heating up of the various parts may cause rupture, due to unequal stresses on and resistance of the material.

When however, a large quantity of water is contained in the pipes and the strain is forced to find its way through it and to carry it along, an explosion may occur, even if the stop valve is opened in the slowest and most careful manner. If there is so little water in the pipe that steam need not force its way through it, no disastrous hammering will occur, nor will the water present be carried along by the steam when the stop valve is opened, as was demonstrated by the amount of water left in the pipe after the end of all tests. The results of the tests with the first arrangement of the second experimental pipe lead to the conclusion that where water has accumulated in U bends of pipes, if the stop valve is opened gradually, the entering steam will distribute itself at once uniformly over the surface of the water, and by virtue of its pressure, in spite of the original condensation, is not only maintained, but steadily increased, and will prevent any agitation of the water, and, consequently, hammering. It, however, a sudden change of pressure and a rapid influx of steam occur, then the water will be agitated, and, once in motion, it will cause violent and dangerous hammering in the pipe. Therefore, steam pipes with pockets are to be avoided. The variations of the pressures indicated on the gauges after all the tests lead to the conclusion that the water is thrown backwards and forwards, wave-motion like, caused by the influx of steam, and that the pressure is greater or less, depending on the intensity with which the moving mass of water strikes the opening to which the gauge is attached.

TEXTILE IMPORTS FROM GREAT BRITAIN

The following are the sterling values of the textiles imported into Canada from Great Britain for October, 1895, 1896, and the ten months ending October, 1895 and 1896

	Month of October.		Ten months to October.	
	1895.	1896.	1895.	1896.
Raw Wool	£888	£424	£7,907	£7,040
Cotton piece-goods	16,775	18,300	372,194	372,072
Jute piece-goods	8,556	13,142	84,876	132,730
Linen piece-goods	8,753	4,429	125,576	122,240
Silk, lace	246	20,519	6,900
" articles partly of	1,660	849	32,547	24,466
Woolen fabrics	13,839	8,308	211,048	238,979
Worsted fabrics	30,776	19,224	478,448	467,195
Carpets	5,584	4,275	151,469	142,943
Apparel and slops	27,108	24,726	310,994	311,502
Haberdashery	7,606	5,228	131,024	141,962

SCOURING AND FINISHING

Coming from the machinery of the spinning mill, woolen, worsted or mohair yarns usually contain more or less oil, which is used for lubricating the stock, and various foreign substances incidental to handling. Therefore, write Lee K. Frankel and Aaron Hamburger, in the *Textile Colorist*, in order to obtain clear, bright and fast colors which will not run or crock, it is essential that such yarns be thoroughly and carefully scoured before they reach the dyehouse.

What is a very simple matter, where good lard oil or olive oil is the lubricant employed, becomes one of considerable difficulty where recourse is had to the cheaper lubricating compounds containing mineral oils or mixtures thereof. These latter are to a high degree incapable of saponification or of being formed into a perfect emulsion with soaps or alkalis, and hence remain in the fibre to vex the dyer or finisher, by rendering colors cloudy, by leaving stains on the yarns, and by various other difficulties often unjustly attributed to the soap or alkali employed. While on the finer grades of yarns there is a general tendency to use lard or olive oils only, yet it has been the invariable opinion of the writers that the very coarsest and cheapest of carpet yarns should be oiled with only such oils as will lend themselves readily to complete removal. The

saving in labor and soap alone, not to speak of the better condition of the fibre and its improved affinity for color, will in nine cases out of ten pay all the difference in cost.

The writers wish to place special emphasis on the importance of being certain that all oily and fatty bodies have been thoroughly eliminated from yarns previous to their transfer to the dyehouse. Recently our attention was called to the persistent and "unaccountable" crocking of a sample of black-dyed worsted yarn submitted to us. As experience had taught us in such cases that suspicion should be first directed toward a lack of sufficient preparation, chemical tests and repeated extractions of the yarn corroborated our supposition that lack of proper scouring was responsible for the trouble. The proper amount of soap and alkali to be used conjointly in yarn scouring is a matter largely dependent upon the amount of oil and grease in the yarn, etc. But the proper kind of detergents to be employed is a matter on which the opinion of experience is practically unanimous. Potash soaps made from olive oil or olive-oil foots, with carbonate of potash for alkali, form a combination which will leave yarns softer, more "lofty," and less liable to felt than any other cleansing agents. We are mindful of the fact that many skillful scourers get most satisfactory results on coarse yarns with good soda palm-oil soaps and soda ash, yet in general use, and in particular where fine stock is in question, potash will be found the safest basis for either soap or alkali.

Yarns made from mohair or lustre wools are particularly susceptible of a fine appearance, feel and finish, where potash compounds are employed for scouring. As stated above, it is difficult to formulate a fixed soap or alkali solution to fit all cases, but we have found that in ordinary practice a mixture composed of 75 per cent. of a good olive-oil potash soap with 25 per cent. of calcined carbonate of potash, will, with additions of soap or alkali as varied conditions require it, give results which will be entirely satisfactory. For coarser yarns, as above stated, good natural palm-oil soap with sufficient carbonate of soda or soda ash to thoroughly emulsify or "cut" the grease, will be found to answer all the requirements of the carpet manufacturer, but for woolen and worsted yarns used in finer carpets potash soaps and potash alkali will always be found more satisfactory as well as more economical.

In scouring yarns, care must also be taken that the scouring liquor is not maintained at too high a temperature, as excessive heat will have a tendency to mat together or "felt" the yarns and render them harsh as well as "lean" in appearance. In making up stock solutions of soap and alkali, it will be found convenient and practical to dissolve them separately and to make them up into solutions of known strength. These are then added in the quantities required by the yarn to be scoured. A convenient way would be as follows: Dissolve in a barrel holding 50 gallons 50 pounds of soap boiled well with enough water to fill the barrel. Likewise dissolve 50 pounds of carbonate of potash in the same way. This procedure will give solutions of which one gallon will equal one pound of the original soap or alkali. The scouring may then be begun with a bath made up of 75 gallons of soap solution, and 25 gallons of potash liquor with sufficient water to fill scouring machines or tubs. More soap should be added where yarns contain an excessive quantity of dirt and foreign matter, more alkali where excess of grease is the main factor.

For carpet yarns, especially when they have been lubricated with mineral oils, more alkali will often be required in connection with the palm-oil soap used, and the one most commonly employed is calcined carbonate of soda (soda ash).

While the temperature of the scouring liquid should rarely rise above 125° F., yarns containing mineral oils will often have to be treated at a higher temperature in order to thoroughly liquefy the oil which they contain, but in no case should the temperature be allowed to exceed 130° F. For fine yarns 115-120° F. will usually prove a safe and satisfactory temperature.

Methods and materials for scouring, fulling and finishing varied styles of woolen, worsted and mohair fabrics vary so greatly with different manufacturers that the limits of this paper will necessarily compel our confining ourselves to a few points of generally accepted

importance First in importance is the realization of the fact that on the thorough cleansing of the piece depends its entire finish and beauty. Soaps for the scouring and fulling of woolen goods should, therefore, be free from alkaline silicates, which lend a harsh feel; from rosin, which makes cloudy pieces, ill-smelling pieces and sticky pieces; from a large excess of moisture, which causes the soap to lack body and thereby paves the way for undue friction of the fibre through lack of proper lubrication in the fulling mill, and a consequent harshness or tenderness in the finished piece.

For fulling any woolen or mixed fabric, underwear, etc., the writers have in practice always preferred a good, dry soap made of a mixture of tallow and palm oils, which yield a soap of heavy body, excellent fulling power, and, above all things, of perfect solubility. This latter feature, *i. e.* solubility of soap, is a most important one, and should not be overlooked when the choice of a cloth scouring and fulling soap is to be made. Pure tallow soaps, while very good in their way, always contain a large proportion of stearin, which is of all ordinary fats the least soluble when saponified. On the other hand, palm oils contain a less quantity of stearic acid and a larger proportion of the fluid and easily soluble fats, such as palmitin and olein. Palm-oil soaps will, therefore, be much more easily removed from goods after scouring and fulling. Tallow oil, which is composed of the liquid fats of tallow separated from the stearin, is another very desirable element in the composition of the best fulling soaps, as it is bland and softening in its nature and in combination with palm oil makes an ideal fulling soap. Such a soap fulls well, cleans well, and is easily removed by rinsing. A good fulling soap should also be nearly neutral; an excess of caustic alkali will dissolve the fibre and render the goods harsh. The addition of sal soda to a nearly neutral soap liquor will serve every purpose of grease removal and lessen the liability of damage to color or fibre. A good fulling soap should also have the power to unite with the grease in goods, and thus enable it to assist in lubricating.

For worsted goods, where thorough cleanliness and softness of finish is more of an object than a felted surface, potash olive-oil soap or a mixture of equal parts of olive-oil potash and olive-oil soda soaps will be found to answer all purposes of scouring and to yield pieces of beautiful appearance, soft, smooth finish, and clear, bright color. Carbonate of potash and sal soda are both used to fortify the soap bath, but the preference of the writers has always been for potash.

SLUBBING FRAMES.

Continued from last issue.

The bobbins of fly frames turn no inconsiderable item in the working expenses of a mill; consequently, they have always been, to the ingenious, things of constant interest. Almost all materials have been pressed into this service with the object of supplanting the old wooden tube. Paper, compressed or pasted in layers, so far, has not been a success, the latter failing, perhaps, because of its lightness, and both styles having the great drawback of requiring wooden bushes at both ends, which by the constant taking off and putting on become loosened and forced from their places. Tin had also the objection of wooden bushes, along with the additional one of being easily dented by a fall or a knock of any kind. Taking everything into consideration, however, paper seems to be the most promising of all materials, when used in the compressed form, as it will stand a good deal of knocking about without damage, and would not be affected, except in the slightest manner, by climatic changes—extremes in dryness or moisture—and it only requires some one with a practical knowledge of what are really the requirements to make the small alteration which would make it a success from every point of view; but up to date it may be confidently asserted that for the purpose we have had nothing to beat wood.

For the strengthening of the wooden tubes, shields are of the greatest utility, and of these the styles and makes are legion: yet we have to congratulate one of our citizens on the happy thought of corrugating these shields, and by this means lessening their liability to come away from the bobbins, as the grip on the wood is very much increased.

On slubbing and intermediate bobbins, if the top shields are larger on their outside diameter than the bobbin, they are a hindrance, and should be dispensed with. This will facilitate the removal of the residuum of sliver when replacing an almost empty bobbin by a full one, the center being enabled to slide it off instead of having to unwind it. Because of the absence of such a shield, as has been described, makes it easy to remove the sliver, it should always be present on a roving bobbin, as the spinner is deterred from taking out a bobbin with one or two layers on, owing to difficulty in cleaning the bobbin, and he finds it easier to allow the bobbin to run almost out, and what would otherwise be converted into waste, is spun into yarn.

The jamming of the spindle in the collar generally takes place after the frame has been doffed, and is caused by an accumulation of fly, which may come from the inside of the bobbin on to the top portion of the spindle during the time the rail has been working at its shortest traverse, and as after doffing it goes at once to its longest traverse, the accumulation is carried into the top of collar by the spindle, and the latter gets jammed as soon as the rail begins its ascent. This is not so serious as jamming on the downward course, as very often the result in that case is the breaking off of the leg which carries the collar.

BARBOUR NEEDLEWORK



No. 5 of Barbour's Prize Needlework series is now in circulation. It is very prettily got up, and contains many beautiful and useful illustrations—some of them colored—of the various uses to which these threads may be put in lace making and embroidery. It gives descriptions of 50 different kinds of lace and special adaptations of them, with detailed instructions how to imitate them. The illustrations are those of specimens sent from many different parts of the world by amateur lace makers. This little work can be bought for 10c, and would be of great use to needlewomen who are fond of embellishing their homes with the work of their own hands. It would also serve as an attractive detail on a counter, besides being a certain introduction of these flax threads to numbers who know nothing of them. The Canadian Agents are Thomas Samuel & Son, of Montreal and Toronto.

LITERARY NOTES.

The Century Co had accepted Dr. S. Weir Mitchell's new novel, "Hugh Wynne, Free Quaker," for book publication, and it was to be issued this autumn. A large edition had been printed and advance orders had been received from the trade, when the strength of the story and its probable drawing power as a serial in *The Century* decided the editors of that magazine and the publishers to suppress the book for a year and use the novel first in *The Century*. Those who have read the story consider it not only Dr Mitchell's masterpiece, but one of the really great American stories. The author believes that one may so saturate himself with the essential particulars of any time as to be able to live in it and speak of it with the familiarity of the life of his own day. Dr Mitchell has made a careful study of the customs, dress, sports of Revolutionary days, and the manners of the interesting social groups which formed the society of Philadelphia from 1753 to 1783, and he has made studies of all the historical persons who are brought into the book. The character of Washington is said to be drawn in a singularly lifelike way, and the contrasting sides of his character interestingly set forth. The Historical Society of Philadelphia has given Dr. Mitchell access to the great collections of family letters stored in its vaults, and the novel will be historically accurate in every particular. While the hero himself and those who take the most prominent parts in the book are entirely fictitious, the use of real persons as side characters makes it peculiarly realistic.

The *Montreal Witness*, this being its jubilee year, has been printing ever since last December a weekly page of the reminiscences of its early readers who still survive, many of which have been of much interest, and all have been full of eager and hearty good will for the paper which has been to the writers a life long counsellor and family friend.

This is the fiftieth year of publication of "The Canadian Almanac," and its size has been increased to 354 pp. Among the new features are a short History of Canada, giving the main events in Canadian history, chronologically arranged, an Historical Diary of the years 1895-96, and an interesting article on the King's Loyalists. The regular departments of the "Almanac" have been brought up to date, among them being that invaluable Post Office Gazetteer of the Dominion, giving the name of every place in Canada, with the railroad or steamship lines on which located or nearest railway station. The usual mass of interesting statistics and astronomical calculations is given, and the "Almanac" is embellished with engravings of prominent persons and public buildings. The Copp, Clark Co., Ltd., Toronto.

THE WOOL MARKET.

TORONTO.—The fleece wool has now nearly all been sold for export to the United States, little if any being left. Prices are therefore about nominal at 21 to 22c. for combing. Pulled wools are in moderate demand from the local mills at 21 to 22c for super, and 22 to 23½c. for extra.

MONTREAL.—Though manufacturers are buying sparingly, the market continues very firm, all fine showing an advance of 10 to 15 per cent. in the last couple of weeks. Some good sales of B.A. have been made at an advance of 10 per cent. We quote: Capesgreasy, 15 to 16½c.; B.A. scoured, 26½ to 35c.; Canadian combing fleece is now selling at 24c.

ARTHUR LAWRENCE, brother-in-law of Wm. Clark, of the West Flamboro woolen mills, is now carder at the Wardlaw yarn mills, Dundas. Mr. Wardlaw is bringing out various new samples of yarns suited for knitters of golfing and bicycle hosiery.

THERE have been recent changes in the firm of M. Harding & Son, shoddy manufacturers, Simcoe, Ont. One son recently went to the Waterloo woolen mills, and the other has since gone to take charge of the carbonizing department of Brodie & Co., Hespeler. Mr. Harding is at present carrying on the business alone.

FABRIC ITEMS.

William Stone, hatter, of Chatham, Ont., is in financial difficulties.

H. Nicholson, tailor, Port Arthur, is offering a compromise at 25 cents on the dollar.

The stock of Mader & Co., dry goods, Strathroy, Ont., has been sold at 46c. on the dollar.

Robert Dixon, dry goods, Rossland, B.C., has sold out to H. R. Dunlop, late of Montana.

M. J. O'Hearn, late of Orillia, Ont., is opening in dry goods and clothing at Rossland, B.C.

C. Ross & Co., dry goods, Ottawa, lost \$250,000 by fire on December 3rd, \$100,000 insurance.

In the estate of Gamble & Co., dry goods, Ottawa, a dividend of 37 cents on the dollar has been declared.

William Bonnell, commission merchant, 82 Bay St., Toronto, died at his residence, 402 Bloor St. west, recently, in his 68th year.

The Dominion Government is at present conducting an enquiry into the method in which certain contractors for military supplies have been observing the specifications.

At the quarterly meeting of the Dominion Commercial Travelers' Association, held in Montreal, November 14th, J. D. Rolland was elected president, to succeed Col. Fred Massey, by acclamation.

Long & Bisby, wool merchants, Hamilton, Ont., who recently purchased the stock of the McPherson boot and shoe business, together with the factory, have made a sale of the entire stock to a Toronto firm.

Joseph Albert Duchesne, of Montreal, doing business under the name of Joseph Albert Duchesne & Co., dealers in woolens and tailors' trimmings, has assigned on demand of J. Horsfall & Sons. The liabilities amount to about \$3,000.

A block of seven-story buildings in Bradford, occupied by a large number of business firms, was destroyed by fire Nov. 30th. The loss is placed at £200,000. Among the occupants of the buildings were Holdsworth & Sons, Possette & Co., and Ainsworth & Co., all woolen merchants.

"Eaton's, the great Toronto departmental store, are running a parcel delivery express through the Annapolis Valley with Kentville as a central depot, in connection with their letter order department. What do Halifax merchants think of the scheme?"—Halifax *Evening Mail*.

Shears & Selater, St. John's, Newfoundland, are doing a general commission and brokerage business, and represent a number of leading Canadian and English firms. Their Canadian business should increase materially with the industrial development of Newfoundland and the consequent growing closeness of relationship with this country.

S. Carsley Co., Ltd., Montreal, recently gave the newsboys and girls their annual treat of one suit of underwear, stockings and mufflers. The total number of newsboys and girls this year was two hundred and eighty. The generosity of Mr. S. Carsley is shown in this splendid manner every year to the great increase of the material comfort of a deserving class in the community.

The creditors of the Ontario Straw Goods Company and the American Felt Hat Company met recently in the office of E. R. C. Clarkson, the assignee, and decided to sell the total assets to Thos. Dunnett for \$19,000. A statement was presented showing liabilities of \$37,000, consisting of trade debts \$15,000, due to the bank \$15,000, and due to T. Dunnett for money advanced, \$7,000. Against the bank's claim, however, is a life insurance policy for \$10,000. The assets consisted of stock \$25,000, and book debts \$4,000. Mr. Dunnett will continue the business.

A recent Associated Press dispatch says the Coats Threads Co., which last summer became amalgamated with the Clark Company, Jonas, Brooks & Brothers, and James Chadwick & Brothers and announced that the company would raise its total nominal capital from £5,750,000 to £7,500,000, has made known that the Coats concern has absorbed the thread mills of Finlayson, Bousefields & Co., Scotland, and that it is also negotiating with the Knoxes for their factories in Scotland and the United States.

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.

A woolen mill is contemplated in Lake of the Woods district, at Emo, Ont.

The *Thorold Post* says that the knitting mill in that town is running full time.

The Truro, N.S., Dye Works are now fitted up with machinery, and are pushed with orders.

J. H. Etherington, St. Catharines, Ont., has put two additional looms in his carpet factory.

Mr. Twigg, of St. Catharines, has secured the position of dyer in the Gillies woolen mill, Carleton Place, Ont.

G. T. Armstrong has sold his interest in the Sherbrooke Yarn Mills to John McDonald — *Sherbrooke Examiner*.

It is believed that John Penman, of the Penman Mfg. Co. (knit goods), Paris, Ont., will be the next mayor of that town.

We understand that Mr. Barnes, whose cotton batting factory at Georgetown, Ont., was burned last month, will not rebuild.

Frank Ryan, an employee of the woolen mills in Markham village, caught his head in a mule last week and was badly cut.

Mark Waind, of Elora, has sold his glove factory at Georgetown, Ont., and purposes resuming the piano and organ agency at Elora.

A pile of wood at Simpson's knitting factory, Esplanade street, Toronto, caught fire recently, and damage of about \$20 was the result.

A fire which occurred at Bellerive, Que., near Valleyfield, Friday morning, was attacked by the Cotton Mill Company's brigade.

The one-set woolen mill belonging to the estate of the late Hiram Davis, Way's Mills, Que., was offered for sale by auction on December 1st.

The office of the Galt, Ont., Knitting Co. is being removed, and when the work is completed it will present a handsome appearance, says a local exchange.

The new boiler for Ferguson & Pattinson's woolen mill, Hespeler, Ont., which was supplied by Goldie & McCulloch, Galt, has been placed in position.

The industries of Kingston, Ont., are flourishing. The hosiery mills are working overtime, and the Dominion Cotton Co.'s mills have six months' orders ahead.

Lucas & Grindrod have purchased property on Belvidere street, fronting the C.P.R. station, an excellent site for a manufactory, says the *Sherbrooke Examiner*.

Forty carloads of sisal have been received at the G.T.R. freight sheds, at Kingston, Ont., for the penitentiary, where it will be used in the manufacture of binder twine.

The Royal Electric Company has just completed the installation of an incandescent lighting plant in A. W. Brodie's woolen mills, Hespeler, Ont. — *Canadian Engineer*.

A by-law was voted upon at New Hamburg, Ont., recently, and carried almost unanimously, granting a loan of \$3,500 for a term of years to A. R. Burrows, of Guelph, Ont., carpet and chenille manufacturer. Mr. Burrows gets a building at a low price, and free of taxation as well.

A short time ago the office of the Glen Tay, Ont., woolen factory was entered by burglars, who blew open the safe. No money having been in it, their labor was unrewarded.

The woolen mill at Speedville, near Preston, is now run by John Martin, father of the late S. C. Martin, the former proprietor. Mr. Martin sells his output of yarns to Newlands & Co., Galt.

The Brussels carpet factory at Elora, Ont., formerly owned and operated by Talbot, Cockroft & Harvey, has been purchased by Mr. Dresser, who is manager, and is now running the mill.

A small fire in the shafting of the Eagle Knitting Co.'s factory, Hamilton, Ont., took the Fire Department for a run Nov. 25th, but the blaze was extinguished by the employees before the firemen arrived.

Newlands & Co., of Galt, have had a busy year, and are working to their full capacity on glove linings, fancy napped cloths for infants' cloaks, and imitation fur robes and fur overcoats, the latter class having a larger sale than last year.

A pot of sulphur in Adolph Schmidt's fur drying works at 97 Richmond street east, Toronto, was accidentally overturned, and set fire to the building, December 8th. Before the blaze could be extinguished over \$500 damage was done. The insurance amounts to about \$3,000.

Oxford Manufacturing Company, Ltd., is applying for a Nova Scotia charter to carry on a general woolen manufacturing business in the town of Oxford, N.S. Capital \$76,000. The incorporators are William Oxley, Harvey L. Hewson, George D. Hewson, John G. Wells, Henry Davis, Oxford.

The C. Turnbull Co., Ltd., of Galt, in addition to their staple lines of shirts and drawers, are manufacturing golf and bicycle stockings and children's ribbed vests and drawers. These goods are received by the trade with the favor which the products of the C. Turnbull Co. are sure to command.

When working at his machine, at the Montreal Cotton Co.'s Mills, recently, Charles Gurdapee had the misfortune to lose the four fingers from his left hand. He had only returned to work a few weeks ago, having been laid up nearly all summer through an accident whilst stopping a runaway team.

The Redmond, Greenleese & Company, Ltd., is applying for a Dominion charter to manufacture hats and caps in Montreal. Capital, \$100,000. The incorporators are Edward J. Redmond, Winnipeg, Stephen T. Greenleese, Montreal; C. Joseph Redmond, James Redmond, Walter D. MacDougall, Winnipeg.

The Montreal Cotton Co., Valleyfield, Que., is adding to its Institute Building. The club-room, when the new addition is finished, will be one of the most complete to be found in any part of the country, and is very much appreciated by the help employed in the mills. This club-house is erected by the company for the benefit of its work-people.

Recently the Taylor Air Compressor Co. took a large party from Montreal to examine the plant installed at the Dominion Cotton Co.'s mills at Magog, Que. Mr. Whitehead, the manager, and Mr. Dolphin, the superintendent of the cotton mills, kindly showed the visitors over the building, telling them how very satisfactory the new plant had proved itself.

Charles F. Taylor's patent paper cop tubes have been long and favorably known to the Canadian trade. They came into the market first when the Hochelaga Cottons Mills, then known as the Victor Hudson Cotton Mfg. Co., were started. The manufacturer of these cop tubes has been before the trade for 25 years, and if good materials and good workmanship are any guarantee of success, they will certainly remain before the trade for at least another 25 years.

Wool Washers

Dryers and Carbonizers

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The machinery of the Weston, Ont., woolen mills has at length been sold off. Out of the machinery sold to various parties, Brodie & Co., of Hespeler, have bought about nine sets of cards, and have laid the foundations of a new building to be finished in the spring, in which they will manufacture meltons, beavers and other napped cloths.

The Armitage Manufacturing Company of Toronto, Ltd., is applying for an Ontario charter for the manufacture and sale of canvas, window-blinds, bookbinders' cloth, table oil-cloths, floor oil-cloths, etc. Capital, \$10,000. The applicants are John L. Armitage, Newark, N. J., Edwin Armitage, W. E. Kilgour, F. G. Hayward, Toronto, Edward J. Johnston, Edgar R. b. Hayward, Whitby.

J. Graham, of the Laska woolen mills, stored a quantity of wool in Aurora last June and July, of which he found some eight tons missing recently. Wool merchants in Toronto were able to locate the missing stock, and Mort Lloyd, George Willis and Amos McCoy were arrested and will be tried in Toronto upon an accusation of stealing the wool.

The Mount Forest Woolen Mills Company, Ltd., is applying for an Ontario charter to carry on the business of woolen manufacturers in the town of Mount Forest, Ont. Capital, \$15,000. The incorporators are W. A. Fraser, Egremont, D. K. McArthur, Hopeville, George Watson, Proton; John Jackson, Minto, and V. E. Tanner, Mount Forest.

R. HARKNESS, Tamworth, Ont., is to establish a fur-tanning business in Renfrew, Ont.

CHEMICALS AND DYESTUFFS.

Castor oil is very much higher owing to scarcity of seed; lowest price 9 to 10c according to quality. Gambier is easier. Sulphate of copper is 2 per ton dearer. The following are current quotations in Montreal.—

Bleaching powder.....	\$ 2 00	to	\$ 2 10
Bicarb soda.....	2 25	"	2 35

Sal soda	\$0 75	to	\$0 85
Carbolic acid, 1 lb. bottles	0 27	"	0 30
Caustic soda, 60°	1 80	"	1 90
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 75	"	2 00
Sulphur roll	1 75	"	2 00
Sulphate of copper.....	4 75	"	5 50
White sugar of lead	0 07	"	0 08
Bich potash	0 10	"	0 11
Sumac, Sicily, per ton	60 00	"	65 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	2 00	"	2 10
Castor oil.....	0 09	"	0 10
Cocconut oil	0 06½	"	0 07

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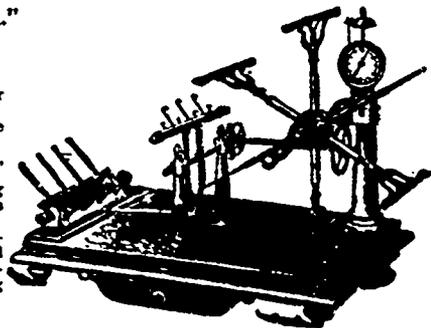
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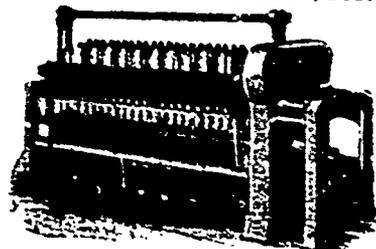
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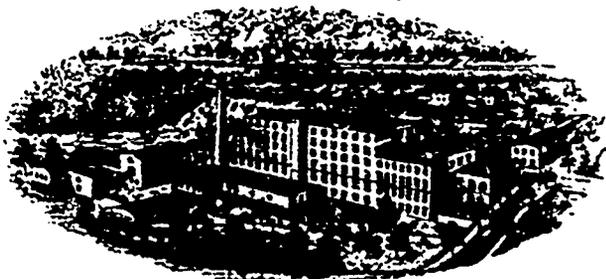
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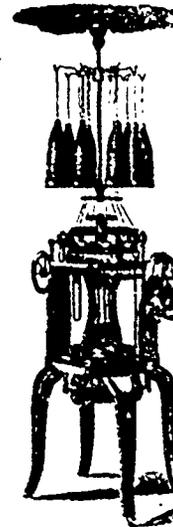
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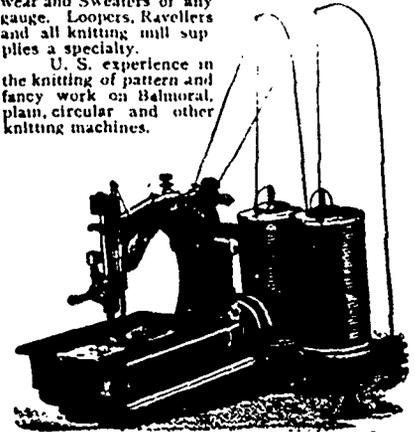
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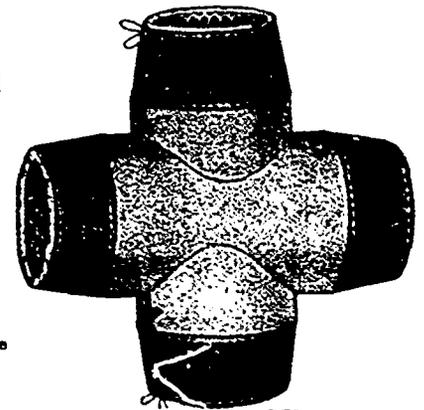


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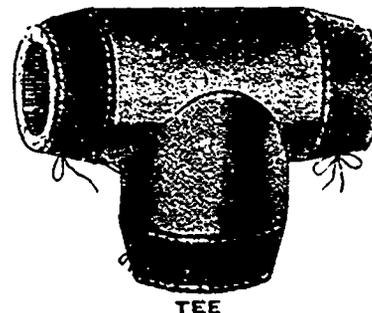
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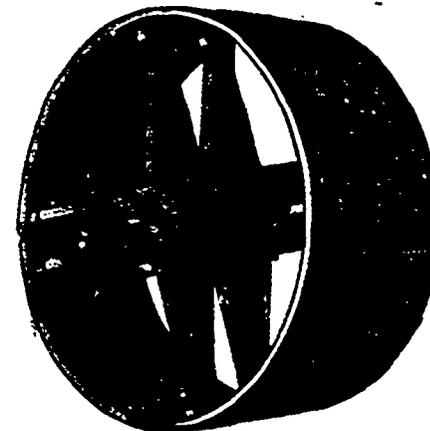
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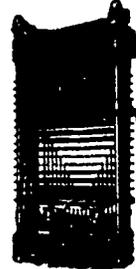
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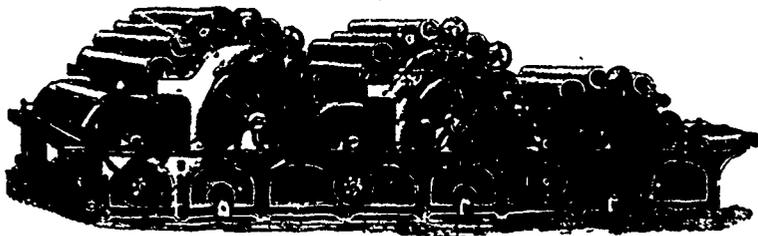
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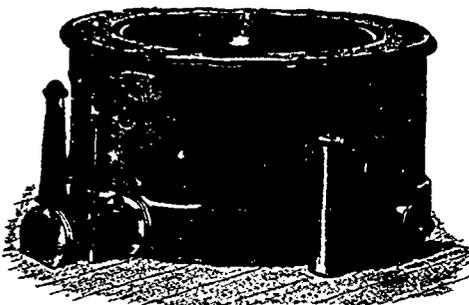
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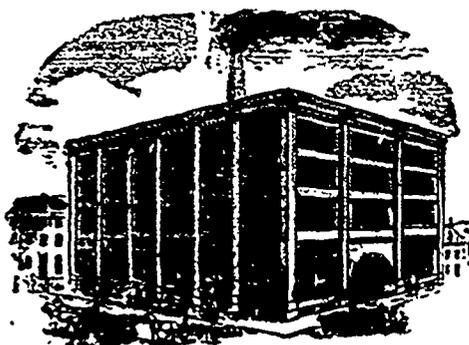
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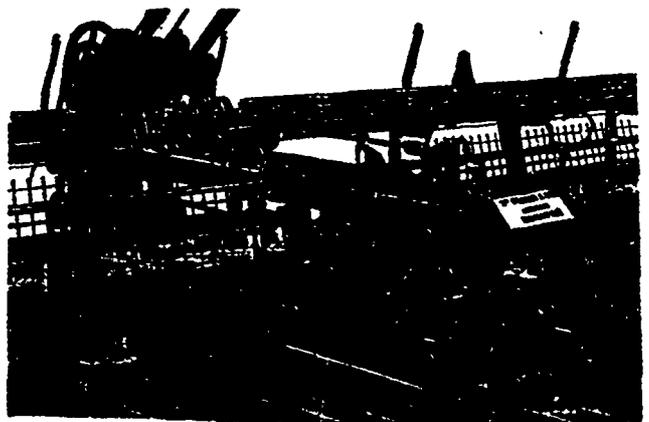
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SELLING AGENTS

Frank McElderry, the well known dry goods commission merchant, died this month at his home in Guelph, Ont. Mr. McElderry was formerly agent for the Ontario Cotton Mills, Hamilton, also the Moncton Mills, and before the days of the syndicate was one of the most prominent manufacturers' agents in the cotton trade, he sides representing some large British houses.

ONE ST. JOHN INDUSTRY.

The St. John *Gazette* has this about the recent hostilities in the cotton trade, which have been terminated by the withdrawal of the cut line from the market: "The *Gazette* is glad to be in a position to say that the New Brunswick and St. John cotton mills, run and owned by Wm. Parks & Co., Limited, of this city, are so crowded with orders that it is necessary to work overtime, in order to keep pace with the orders coming in. This is particularly gratifying when it is known that the mills in other parts of Canada controlled by the combine are mostly working half time. It shows that the people of this Dominion appreciate the efforts of those men who do not attempt to throttle trade by forming combines. There are four cotton mills in New Brunswick; two of them are owned by the cotton combine, while the Gibson mills at Marysville sells all its product to the combine under contract. Therefore, while Mr. Gibson controls his own property, so far as the manufacturing of cotton is concerned, he has nothing to do with its sale, his only customer being the combine. Under Mr. Gibson's contract he is able to run his mills all the time, but in doing this, the goods turned out at Marysville have so stocked up the selling agents of the combine that they are compelled to shut down their own mills. This is a very good arrangement for Mr. Gibson, but it is rather rough on the combine. The determined effort on the part of the cotton kings to close up Mr. Parks' mill by reducing the price on a staple line of goods to somewhere near the cost of production, has failed in its purpose. Mr. Parks has not only withdrawn this line of goods from the market and is supplying other goods the prices of which have not been cut, but he is obtaining orders for these goods in such quantities that it is necessary to work overtime to keep pace with the demand.

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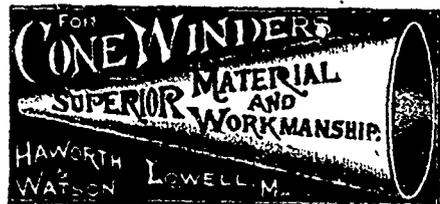
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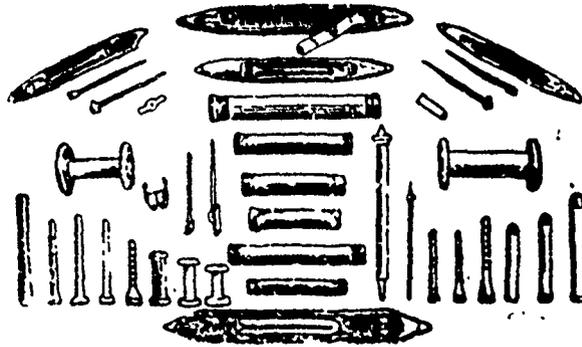
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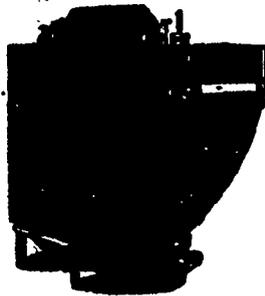


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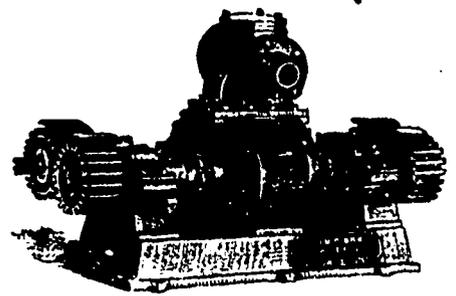


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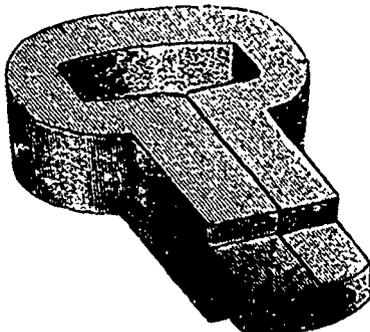


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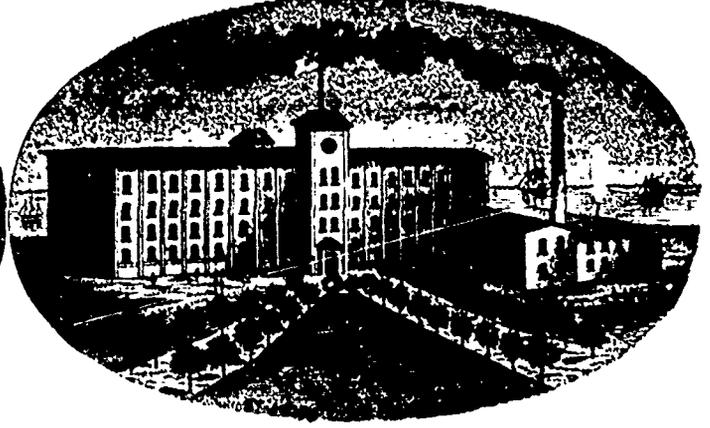
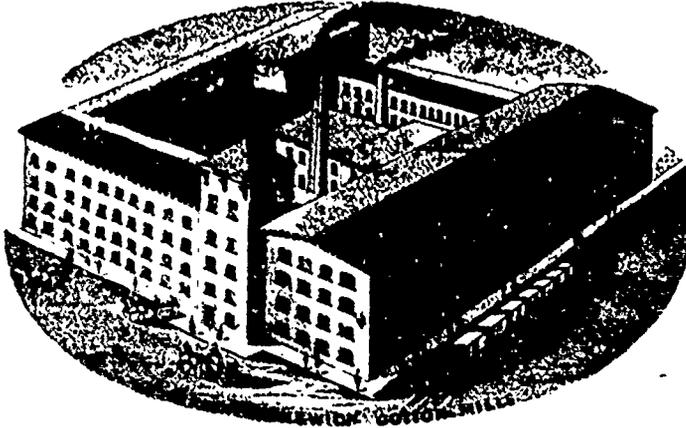


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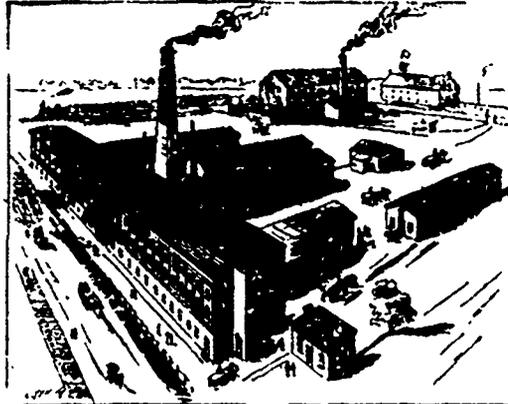
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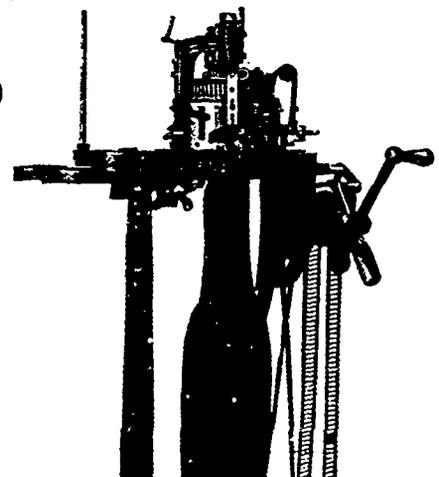
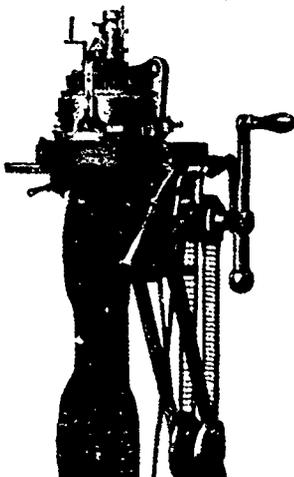
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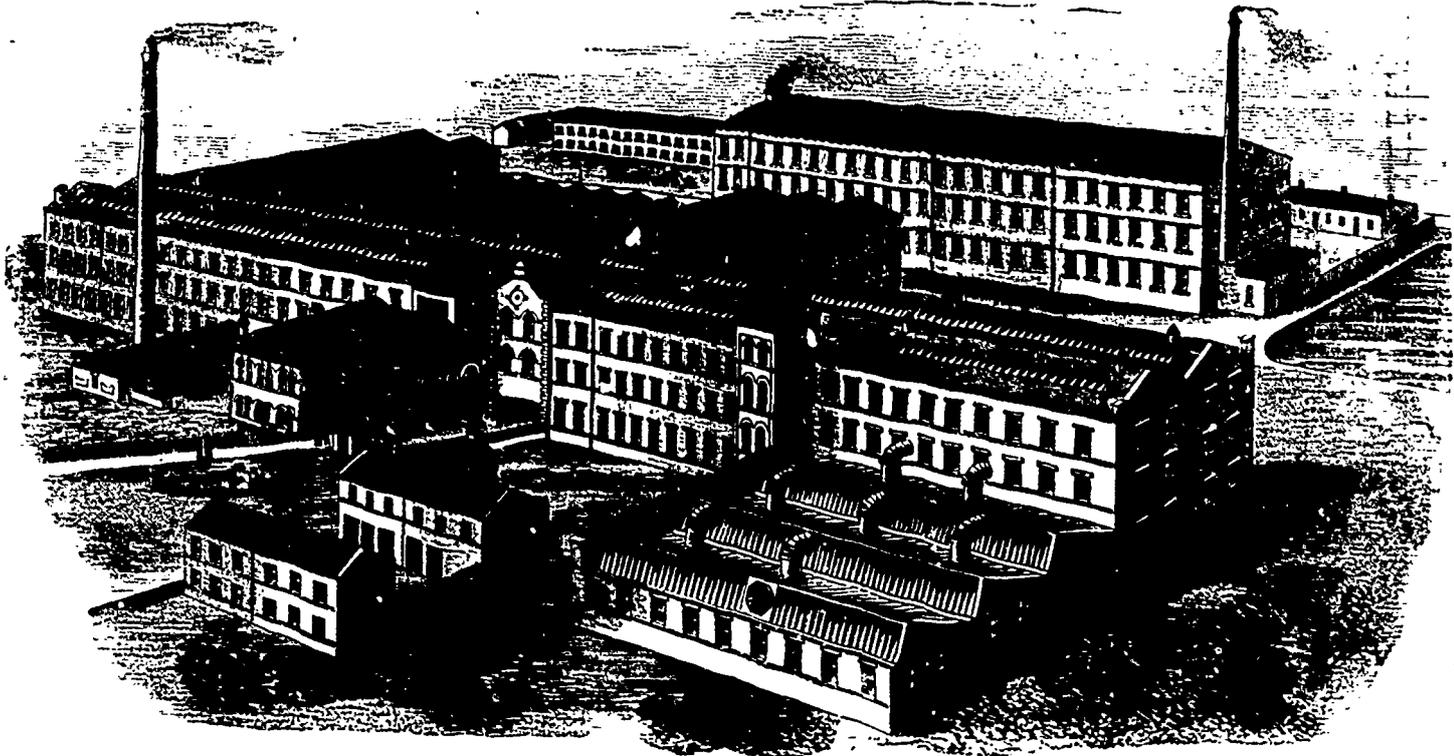
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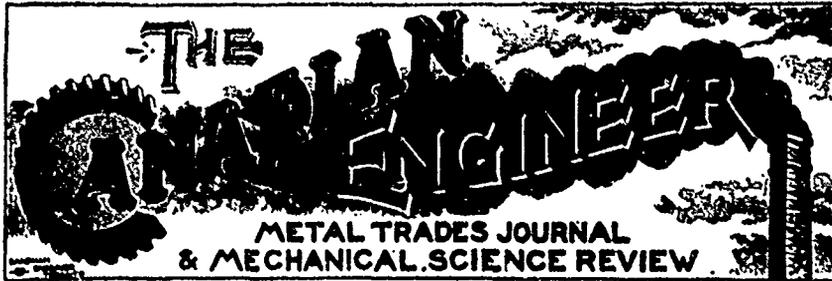
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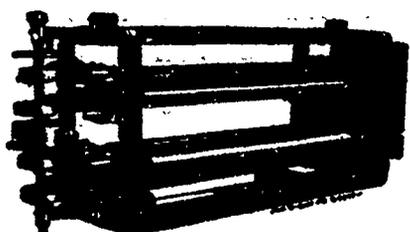
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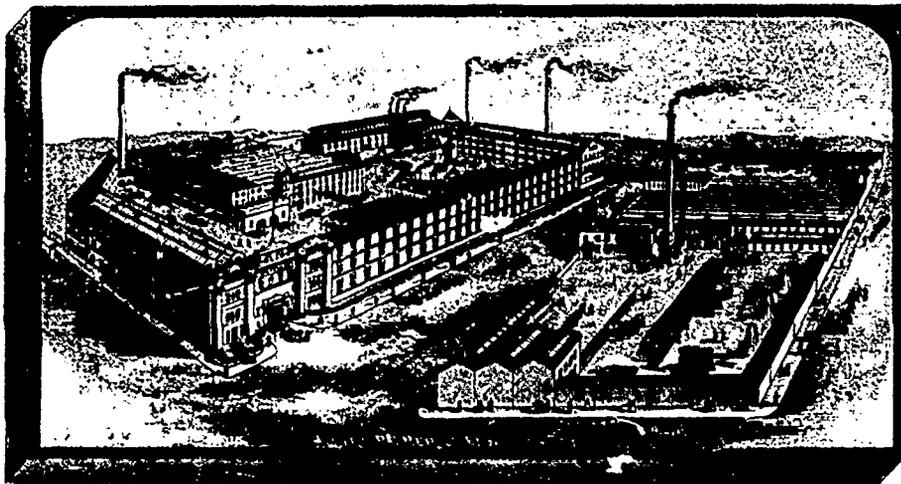
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